SCIENTIFIC AMERICAN

A WEEKLY JOURNAL OF PRACTICAL INFORMATION, ART, SCIENCE, MECHANICS, CHEMISTRY, AND MANUFACTURES.

Vol. XVII.--No. 10. [NEW SERIES.] NEW YORK, SEPTEMBER 7, 1867. $3 per Annum. [IN ADVANCE.]

Improvement in Brick Making Machines.

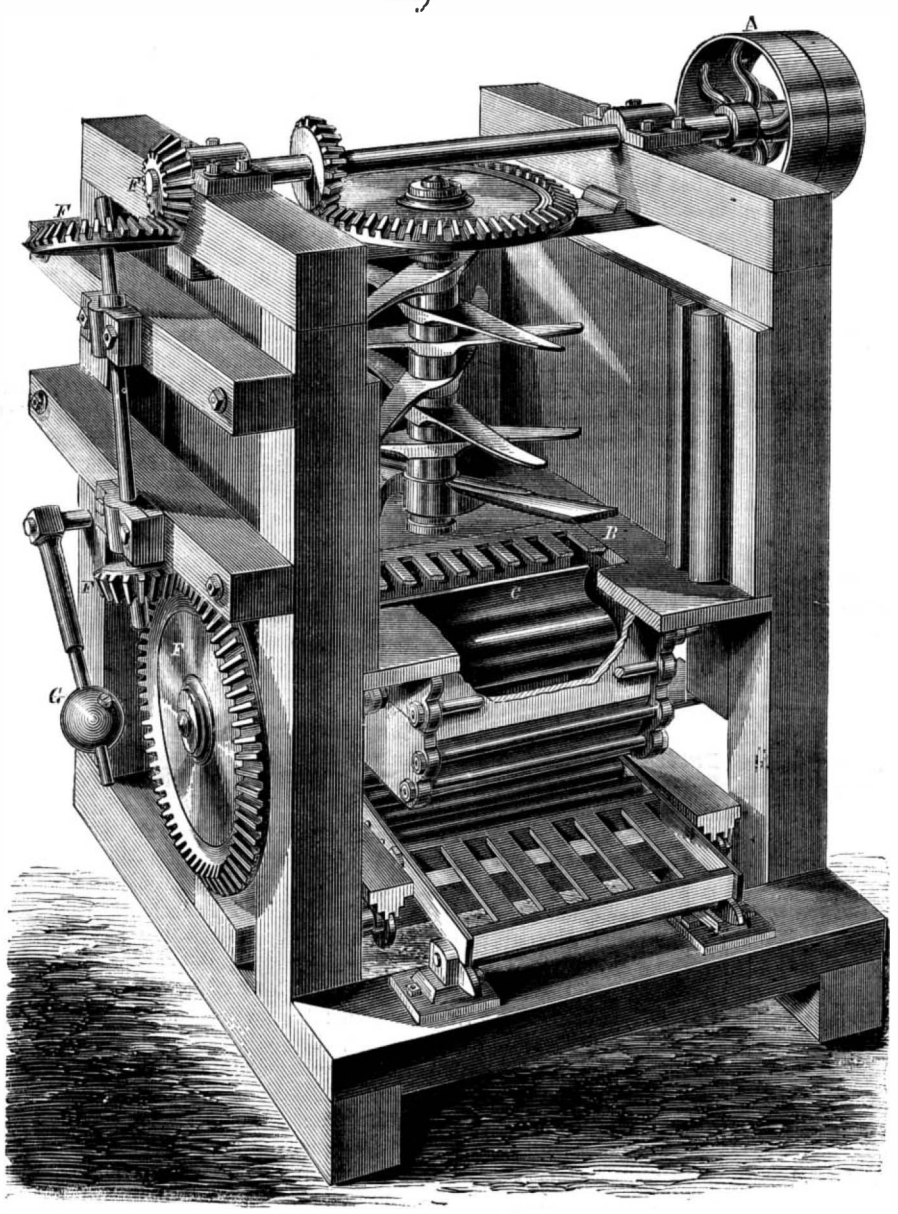
This machine was patented through the Scientific American Patent Agency, July 2d, 1867, by A. J. Sprague, of Toledo, Ohio, assignor to himself and Paul Jones, of the same place. It has some important peculiarities of its own in its construction and working. Fig. 1 is a perspective view, with the front of the mud mill and press box removed to show the rotating, grinding arms, and the pressing appendage; and Fig. 2 is a vertical section of the parts below the mud mill.

As will be seen from Fig. 1, the arms of the mud mill are rotated from the power applied to the shaft at A, through the medium of bevel gears. These arms are inclined upward to lift and present repeatedly the clay to their action, while the lower series act as scrapers to force the prepared clay into the mold box. This mold box is guarded against the introduction of stones, roots, or any extraneous substances by means of a grate, B, directly over it. Inside the mold box is a curved presser, C, which in its rotation takes the clay from the grate, B, and forces it into the molds placed under the box. The molds are introduced at D, Fig. 2, behind the mold box and in front of the follower, E, same figure, which is actuated from the prime mover by means of the bevel gears and pinions, F, Fig. 1, which give the forward movement of the mold boxes, by means of a simple mechanical contrivance of a pin and a bearing, and the backward movement is controlled by a weight, G, or some similar device. The frame on which the molds travel is furnished with rollers directly under the mold box, in Fig. 1, and is held up to place, as in Fig. 2, by the cams, H, on a shaft. In Fig. 1 these are seen turned down to give room for reaching any of the parts under the mold box. The action of the mold platform is reciprocatory with that of the compressor, C, so that as soon as the compressor has passed over the width of the mold the bricks in the mold are thrown out at the front, to be taken away, and the frame and compressor are ready to fill another set of molds.

This machine runs regularly at the rate of 43,000 bricks per day of eight hours. The compressor delivers the bricks in a very condensed state, smooth and hard. The clay is thrown into the mud mill just as it comes from the bank, and moistened with water as it passes through. The result is a superior quality of bricks insured by the enormous pressure of the compressor.

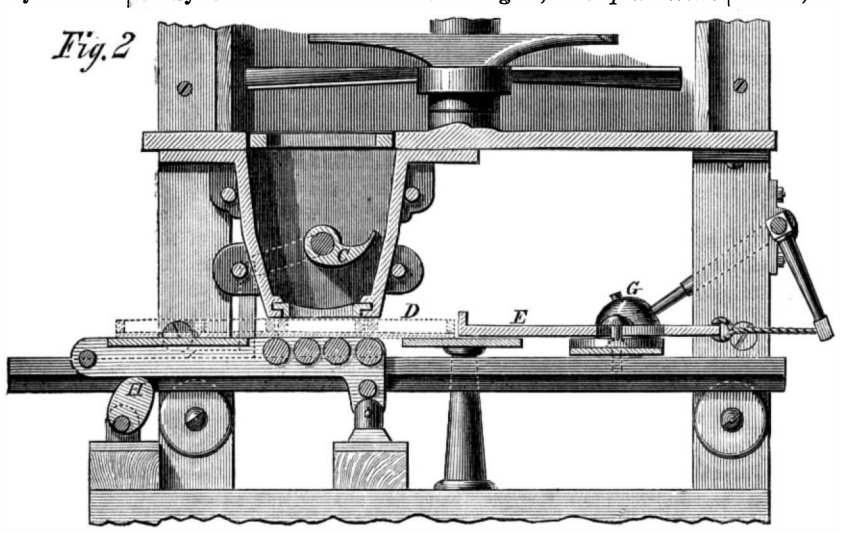
Further information relative to the machine may be obtained by addressing as above, A. J. Sprague & Co., Toledo, Ohio.

Fig. 1



SPRAGUE'S IMPROVED BRICK MACHINE.

Fig. 2



The Poison of the Cobra-di-capella.

The *Melbourne Argus*, for April 26th, contains an interesting article, by Dr. G. B. Halford, on the above subject, from which we extract the following:—"The melancholy accident which so lately happened with the cobra-di-capella induced me to make some experiments and observations upon the action of the reptile's poison. When a person is mortally bitten by the cobra-di-capella, molecules of living 'germinal' matter are thrown into the blood, and speedily grow into cells, and as rapidly multiply; so that, in a few hours, millions upon millions are produced at the expense, as far as I can at present see, of the oxygen absorbed into the blood during inspiration; hence the gradual decrease and ultimate extinction of combustion and chemical change in every other part of the body, followed by coldness, sleepiness, insensibility, slow breathing, and death. The cells which thus render in so short a time the blood unfit to support life are circular, with a diameter on the average of one seventeen-hundredth of an inch. They contain a nearly round nucleus of one two thousand-eight-hundredth of an inch in breadth, which, when further magnified, is seen to contain other still more minute spherules of living 'germinal' matter. In addition to this, the application of magenta reveals a minute colored spot at some part of the circumference of the cell. This, but dark fluid blood, the fluidity indicating its loss of fibrine, the dark color its want of oxygen, which it readily absorbs on exposure after death. It results, then, that a person dies slowly asphyxiated by deprivation of oxygen. in whatever other way the poison may also act, and so far as the ordinary examination of the blood goes, the *post-mortem* appearances are similar to those seen after drowning and suffocation. I have many reasons for believing that the *materies morbi* of cholera is a nearly allied animal poison. I hope also to show the presence of the poison of our snakes in the blood of bitten and inoculated animals, and beside, its size, distinguishes it from the white pus or lymph corpuscle. Thus, then, it would seem that, as the vegetable cell requires for its growth inorganic food and the liberation of oxygen, so the animal cell requires for its growth organic food and absorption of oxygen. Its food is present in the blood, and it meets the oxygen in the lungs; thus, the whole blood becomes disorganized, and nothing is found after death to make some experiments on the possibility of saving life.

The Opal.

This mineral is known by a number of names, as hyalite, hydrophane, cachalong, girasol or fire opal, wood opal, precious opal, etc. The precious opal is the variety most generally known as applicable to jewelry purposes. It was known to the ancients and derives its name from a Greek word signifying the eye. It occurs in porphyry, sometimes associated with galena and blende, and again in vesicular cavities in amagdaloidal rocks. Dr. Feuchtwanger, in his "Treatise on Gems," says it is found in Hungary, particularly in the neighborhood of the village of Czerwinceza; also in the Faroe Islands, Saxony, and South America. The Hungarian opal is found of various qualities, and is obtained from mines which have been wrought for several centuries, and, according to the archives of that part of the country, there were, in the year 1400, more than three hundred workmen engaged at the mines near the above vilage; whereas there are but thirty at present engaged there, on account of the scarcity of large suitable specimens.

The precious opal is principally used for rings, ear-rings, necklaces, and diadems; the smaller specimens for mounting snuff-boxes, rings, chains, etc. It is ground on a leaden wheel with emery, and is polished with rottenstone and water on a wooden wheel; and, in order to increase its luster, it is lastly rubbed with putty, by means of buckskin, or a woolen rag and red chalk. Its form is generally that of a semicircle, lens, or oval; sometimes of a table, and then also with some facets; but great care has to be taken that the edges, on account of the softness of the stone, do not wear off. It is also apt to spring in a temperature suddenly changing. When mounted, it receives a colored foil, or a variegated silk stuff, or a peacock-feather on the back, but it looks best in a black casing.

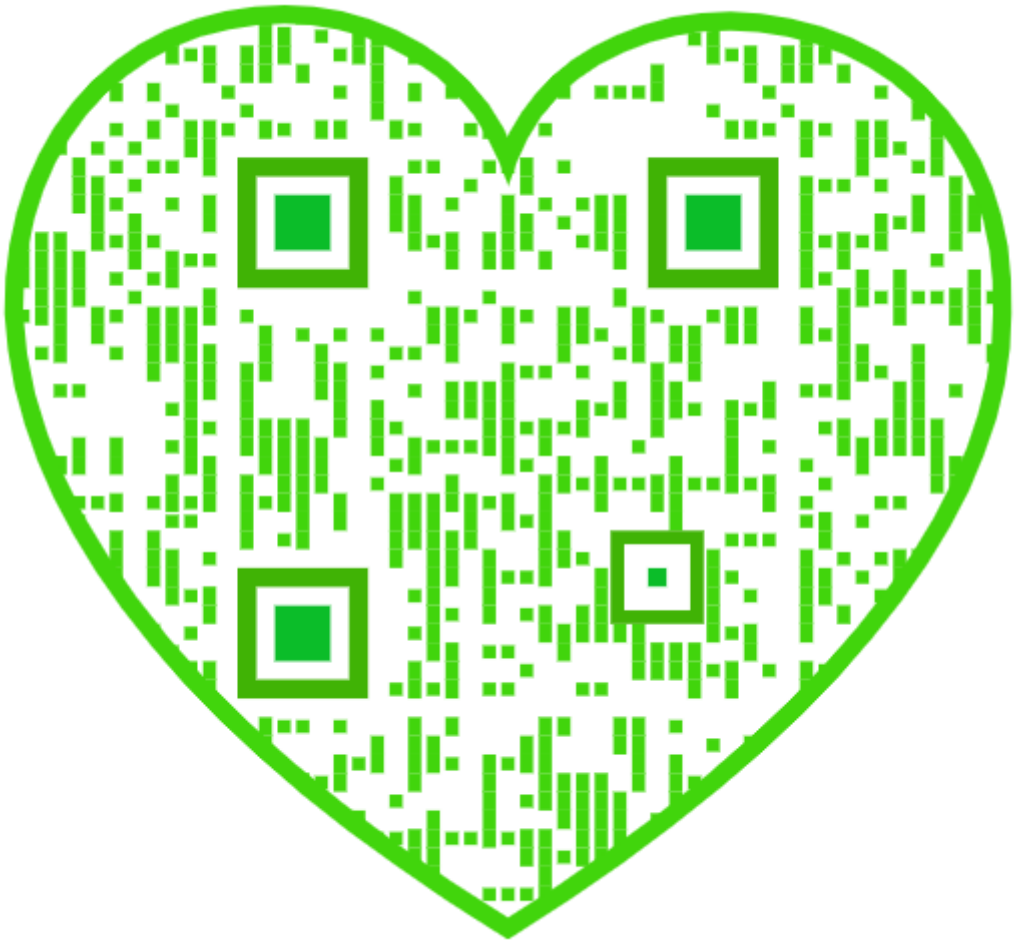
Cracks and fissures may be removed by leaving the precious opal for some time in oil. Very frequently the precious opal is distributed in small particles in the matrix, called mother of opal, which is cut by the jewellers as boxes, and other ornaments; and very often, too, this matrix is plunged into oil, and exposed to a moderate heat, whereby the base grows blacker, and the true precious opal retains it ray of colors. In order to preserve the surface of the precious opal against wear and tear, it is covered with a thin plate of quartz crystal. The pecious opal still stands in very high estimation, and is considered one of the most valuable gems. The size and the beauty displayed by its colors determine its value; and those playing in the red and green colors bear the highest price. Its value has latterly increased on account of the scarcity of the larger specimens. Formerly, a solitary large precious opal, playing in the red color, was sold for two to three hundred ducats; and one playing in both red and green colors, about five lines long, was sold at Paris for two thousand four hundred francs; and lately a single opal, of fine colors, and the size of a dollar, was sold near the locality for three hundred thousand florins; in this country precious opals are sold by the importers at the rate of four to ten dollars per carat, and single specimens, suitable for pins or rings, from two to twenty dollars. The mother of opal is, however, much cheaper; one of five lines size is sold for three to five dollars.

All experiments for imitating the precious opal have hitherto proved fruitless; they were made either by preparing an enamel and adding several metallic oxides, or by affixing to the back of a clear or common opal or enamel, a polished thin plate of the mother of pearl, which may sometimes deceive the ignorant.

The most magnificent Hungarian opal in the London Exhibition, called "the mountain of light"—a very appropriate name—weighed 526½ carats, and was estimated at 4000 pounds sterling.

From Honduras, at Gracias á Dios, large quantities of opals have been imported into this city for the last ten years, at first by the late Mr. De la Raye, and latterly by Mr. Aaron C. Burr; and many large and beautifully cut specimens are in

© 1867 SCIENTIFIC AMERICAN, INC.



the possession of Mr. B. Palmer, of this city; they are by no means inferior to the Hungarian opal. A very large opal, cut and polished by himself, which he values at four thousand dollars, is one and three quarters inches long by one and a quarter inches wide; another, one and a quarter inches long by one inch wide, he prizes at seven hundred and fifty dollars; and a third, one and one eighth inches long by one inch wide, he values at four hundred and fifty dollars.

The ancients held the opal in great estimation, and the anecdote of the Roman senator, Nonius, is well known—that he preferred exile to parting with a magnificent opal which Marc Antony coveted.

In the French crown-jewels are two very large and beautiful opals. One is set in the center of the Order of the Golden Fleece, and the other forms the clasp of the imperial cloak. They were purchased for 75,000 francs. The Empress Josephine possessed the unique opal which was called "The Great Fire of Troy," on account of the great fire sparkles.

The Vienna Cabinet possesses a very large opal, but unfortunately it is cracked. Count Walewski, who is a great amateur of gems, possesses a very beautiful opal, which is oval, the size of a franc-piece, and is said to be extraordinarily brilliant.

The Imperial Mineralogical Cabinet at Vienna, contains the most celebrated specimens of precious opal; one, particularly, may be mentioned here: it is four and three quarter inches long, two and a half inches thick, and weighs seventeen ounces. It was discovered about 1770, at the above locality, and transported to Vienna. It displays the most magnificent colors; is perfectly pure, and not accompanied by any matrix. Half a million of florins were offered for it by a jeweller of Amsterdam, and refused on account of its uniqueness; and the Viennese have not yet dared to put even any approximate value upon it.

EDITORIAL CORRESPONDENCE.

From Berlin to Vienna—Military Oppression of the People—Saxon Switzerland—City of Prague—Its Ancient Curiosities—Agriculture in Austria—A Barbarian Emperor away from Home.

VIENNA, July 31, 1867.

My last letter left me in the streets of Berlin wrapped up in winter clothing, and exercising myself pretty freely to keep warm. I have since changed latitude, but I cannot yet say that I have experienced hot summer weather with the exception of a single day on the railway trip from Prague to Vienna. The air was laden with that oppressive heat that always preceds a thunder storm, and one came on during the night and has left the atmosphere cool and clear. I had previously heard that Vienna was a hot place, and sure enough, on the day of my arrival I thought that at last a spot had been reached where more direct communication could be held with the sun. The temperature here, however, does not vibrate so far in either direction as it does in our country.

I must not neglect to say something of the country and of the people that dwell between the upper and nether mill stone of Germanic power and influence. The feet of the avenging gods have trodden out the independence of Bohemia, and for three hundred years her people have been under Austrian rule. Brave little Saxony, sitting like a diamond in a net-work of States, has not yet exactly been crushed under the feet of the gods; but, as I mentioned in my last, the king holds nominal sovereignty; a sort of civil government over a country and people as interesting as any other in Europe; and unless new wars and fresh hecatombs of human beings are required to satisfy the ambitious lusts of kings, upon the death of King John Nepomucéne, who is now sixty-seven years old, Saxony will pass under the dominion of Prussia. If Europe could be carved up and divided about equally between the four great powers of Russia, France, Prussia, and Austria—each strong enough to take care of itself—and if these great powers would, even now, agree to reduce their standing armies in proportion to the numbers of male inhabitants in each, the world might be reasonably assured against frequent wars, and great burdens would be lifted from the backs of these poor, oppressed people. But I suppose, as of old, "Millions must die that Cæsar might be great."

Dresden, the Court city of Saxony, is in some respects one of the most delightful places in Europe, and much frequented by English and Americans who can enjoy the advantages of good society, excellent educational privileges, and the fine arts, which are fostered with much care. The city is cut in twain by the river Elbe, and the sections are united by two very fine stone bridges. The old bridge is a very solid structure, and has stood long and manfully against the rush of waters and the shock of floating masses of ice which annually storm its strong piers and abutments. This bridge was piously built with money raised by the sale of dispensations from the Pope for eating butter and eggs during Lent. It seems to have been built according to Scripture instruction, otherwise it would have been carried away, as, when the snow melts, the water often rises sixteen feet in one day. Saxony is now strongly Protestant, though the Court is Catholic. The new railway and carriage bridge which connects the Leipzic with the line that runs to Prague, is one of the finest pieces of bridge engineering in Europe, and cost $750,000. It is 1,420 feet long, 54 feet wide, and rises 40 feet above the river. It has twelve arches of 100 feet span, besides two smaller ones. When both these bridges are lighted up in the evening, it would require the skill of a Gerard Dow to paint a picture that could do justice to the effect produced by the light thrown upon the rapid waters of the Elbe and the little steam crafts that go flitting up and down like so many fairies. I was fortunate enough to have a room at the Hotel Bellevue, where I could take in the whole scene, and it impressed me at the time as one of the finest effects that I had ever beheld. Dresden is famous, however, in the eyes of travellers, not for its fine bridges or beautiful environs, but chiefly for its Picture Gallery, which contains the finest collection of pictures in Germany. This preëminence it owes to Augustus III. who was a prodigious patron of the arts, and lavished vast sums of money to acquire some of the most exalted works of the old masters. This collection contains Raphael's famous "Madonna Di San Sisto," which is a miracle of majestic art and beauty combined. When Frederick the Great bombarded the city of Dresden, he ordered the cannoniers to train their guns so as not to injure this noble gallery of art, and though he entered the city as a conqueror, such was his respect for the gems which it contained, that he asked permission of the Electress to visit the gallery as a stranger; and even Napoleon, who was notorious for his robberies of the gems of captured cities to enrich the treasures of Paris, respected these Dresden pictures. The palace of the King is an old, weather-beaten building, wholly devoid of architectural symmetry, and is so shut in by surrounding buildings that one is sadly puzzled to make head or tail of it. Inside there are rich treasures, which amply compensate for its ugly exterior. The "Grüne Gewolbe," or "Green Vaults" are stored with crown jewels, regalia, and other rare objects of art and *virtu*, valued at millions.

But I must not dwell in cities; I must get into the country, up the Elbe, where nature seems to have performed some of her most wonderful freaks. Immediately above Dresden, and on the line of the railway to Prague, which winds along the river, commences what is called the "Saxon Switzerland," which has been the scene of many fierce struggles. Immense masses of columnar sand-stone rock, rising precipitously above the river, have been worn and hollowed out by the action of water until they resemble ruined palaces, dismantled towers, triumphal arches, and broken fortresses. Intervening are fissures and deep caverns into which the rays of the sun never penetrate. Upon the crest of one of these mountains, which rises a thousand feet above the stream, stands the fortress of Königstein, from the top of which the view takes in a landscape of peculiar wildness and sublimity, extending in every direction as far as the eye can reach.

At Bodenback we reach the frontiers of Bohemia, and here in the politest manner possible, the Austrian custom officers search baggage. Here, as elsewhere, tobacco is the bug-bear. If the traveler has no tobacco he can pass unmolested; and as elsewhere through France and Germany, no passport is required. What a blessed thing it is for Kings and Emperors that everybody is adicted to the use of the "vile weed." It is made the prolific source of revenue; and but for it I am not sure that kingdoms and dynasties would tumble into financial collapse.

It takes about nine or ten hours, slow travel, to go from Dresden to Prague, but the whole distance amply satisfies and interests the traveler. The villages that skirt the river are usually squalid looking places, consisting of small, one-story huts, with an occasional chateau or convent, which always seem larger by reason of their surroundings. A large building, no matter how mean it may appear, is always considered a splendid building. Prague, the Capital of Bohemia, is really a fine old city, and but for the presence of a large garrison of Austrian troops, who hang about every street and corner, it would be a delightful place in which to reside. But the presence of so many troops does not improve either the comforts or the morality of the place. The city is not only very ancient, but it abounds in magnificent buildings, and is no less rich in historic recollections. Like Dresden, it is divided by a small river called the Moldau; but, unlike Dresden, Prague is built upon the hills, which lends to the city a very pleasing appearance. The old stone bridge that connects the divided city is one of the most curious that I have ever seen. Above each pier, on either side, are placed some colossal, and some life-like statues and groups of the Saviour, Apostles, Prophets, Priests, and Kings, and on one of the stone caps there is fixed a bronze railing, which, I understood, was put there to mark the spot where, by order of one of the Kings, an offending bishop was thrown over into the river. This tragical act of Kingly tyranny is carefully recorded in an old picture which hangs in the ancient cathedral. John Huss and Jerome of Prague, two of the great reformers performed some of their more important labors in this place. I was very much interested in an old Jewish Synagogue which was erected in the year A. D. 583. The gothic roof, however, is *new*, having been put on in the 14th Century. The entrance to this old mosaic temple is through a narrow door, down several stone steps—not unlike a burial vault. The walls inside are black and grimy with the accumulated dust and cobwebs of centuries. Here, also, within the ark are the old written parchments, and in front the tables of the law, which mutely testify to the patient waiting of the "Chosen people of God," for the coming of the Messiah and the ingathering of the Jews. Around about the temple are gathered this strange race of unbelievers. The streets leading through their quarters are very narrow, and reek with filth and foul odors. How human beings can live in such an atmosphere and surroundings, is a mystery to me. But the baleful influences are vividly traced upon their forms and faces. Yet it is impossible not to feel deeply for such a people. Across the Moldau are thrown two very fine modern suspension bridges, one of which is just finishing. Not far from Prague, a little to the northeast, is the famous battle-ground of Koniggratz, where the proud Hapsburgs of Austria were defeated, one year ago, by the Goths and Vandals of Prussia.

The run from Prague to Vienna is made in nine hours, by express, eighteen hours by slow train; but the whole distance is comparatively tame, except near Brunn, where there are several tunnels and some fine railway engineering. The plains of Austria, about Vienna, resemble our small western prairies. As far as the eye can reach the land appears to be a continuous field of wheat and Indian corn; it being the only country I have yet seen where corn is cultivated as a staple crop. The cultivation, however, of all the lands is done in strips or patches, which forms one of the most singular features of European landscapes. The subdivision of farm lands has been going on for so many generations that now the hard working peasant may possess a small farm twenty rods wide and a half a mile long. Here, as in many other parts of Europe—only, as it seems to me, a little more so—the women do nearly all the labor of the field. I have counted thirty engaged at one time in reaping down a field of wheat. I have seen no agricultural machinery at work except a rude kind of two-wheeled plow, which is no more than the Egyptians did three thousand years ago. The old-fashioned grain cradle is sometimes used, but the sickle, in the hands of women, like the days of Moab and Ruth—though I suppose Moab worked—seems yet to stand its ground against all the ingenuity of McCormick, Hussey, Wood, and others. However, labor is so cheap here and farms, as a general thing are so small, that it would scarcely pay to employ expensive machinery, such as is necessary to the proper cultivation of the large farms in our country.

Vienna is the most beautiful European city out of Paris. It is bisected by the Danube, and through this water communication a considerable trade is carried on with the commerce of the Black Sea.

The Great Barbarian of Turkey, together with the Crown Prince, his nephew, are now here on a visit to the Emperor Francis Joseph. In consequence of the death of Maximilian, who was a brother of this Emperor, no public reception was accorded to the Sultan, but a splendid review of artillery took place, which I was fortunate enough to witness, where I had a chance to see a Christian and a Barbarian Emperor or Sultan ride side by side. This tour of Abdul Aziz is the first which has ever been made by a Turkish Sultan beyond the limits of his own dominions. The religion of Mahomet, it seems, does not permit the Sultan to cross his own frontier into a foreign territory, on pain of losing his crown and his head, and in case of so doing, he must not return. Permission of leave, however, was accorded to him by the Grand Mufti, who is the spiritual head, or Pope, of the Empire, a King above Kings, who commands and it is done. It is to be hoped that some new and improved ideas may get into the Sultan's mind as the result of his northern tour.

S. H. W.

For the Scientific American.

THE FIFTEEN-INCH BALL VS. THE ENGLISH PRESS.

The old saying that the wish is often father to the thought seems be pretty well demonstrated by the tone of many of the English mechanical and popular journals, in their discussions on the late trial of the 15 inch gun against the 8 inch *Warrior* target at Shoeyburyness. Waiving, as it seems, the real merits of the case, which alone should be regarded in a dry mechanical subject of this nature, our English cotemporaries indulge in a good deal of swagger; they bluster as though Brittania had just passed through a serious danger and had escaped without loss of prestige.

The method adopted by some of these journals, of interlarding their ridicule of the American smooth bore system with a sort of scientific jargon made up by mixing a few technical terms with a senseless discussion about "racking," "punching" and "local effect," is well illustrated by the following extracts from the *Pall Mall Gazette*, London, Aug. 1:

"The confusion of thought which is implied in the argument that because the gun succeeded in making holes of so many inches deep on the target, therefore, the American ordnance is more powerful than we have supposed it to be, is so desperate that we scarcely know how to break it down, except by facing it with a point blank statement that the *deeper* the American gun penetrated the *worse* for the Americans and the better for ourselves."

And then comes the following rendering of this dynamic Sanscrit:

"It is no argument against our position to urge that we measure the efficiency of our own system of artillery wholly by the amount of penetratial effect which we derive from it—that the deeper our shot and shell go, and the thicker the targets they pass through, the louder do we crow and the better are we pleased. This argument, we say, does not touch our position, for the simple reason that the American system of gunnery is not our system, but is based upon an opposite theory. The Americans, we are always told, attempt to *rack* and *not to penetrate.* (?), and whatever claims to consideration their guns may possess have always been urged with reference to their power as *racking* not as *punching* engines (?). Now it cannot be too generally understood that racking and punching are not only distinct but antagonistic effects.

Punching means intense local effect; racking means a largely distributed and non-local effect. It is almost impossible to have a *local* and a *non-local* effect at the same time, for very much the same reason that we *cannot at one blow knock a man down and not knock him down.*

The deeper we penetrate the less we rack, and the more we rack the less we penetrate. Therefore to say of the racking system that it penetrates deeply is simply to say that it fails in inverse proportion to its penetrative effects as a racking system."

The engineer of the *Pall Mall* next observes that he is met at this point by two arguments; these arguments (?) really seem to be the offspring of some morbid dynamic action of his overtasked brain. Here are the arguments. "First, that even granting the American gun failed to produce any racking effect, it at least penetrated deeply, and that as practically

© 1867 SCIENTIFIC AMERICAN, INC.

it matters little to a ship how it is destroyed, therefore as a gun produces so much destructive effect, it matters little of what nature that effect may be. Second, that the American guns were never designed to rack exclusively, but to produce a tremendous combined destructive effect."

These buckram "arguments" are then sumarily disposed of thus; with respect to the first, "we have to observe, that whatever penetration may be accomplished under the heavy shot and *low velocity* (?) or American system, very much greater penetration can be obtained by the light shot and *high velocity* (?) or English system." This is shown to be "evident" because "just as a pistol bullet will pass through a plank balanced on its edge, while a slowly applied force of whatever amount will merely topple the plank over."

This scientific writer, next seizing the bull by the horns, describes an imaginary system of ordnance which he boldly dubs the "American system," and then proceeds to knock down the wooden knight thus set up by bowling at him such crushing balls as this. "A heavy shot and low velocity compose in short the very worst system which could possibly be applied to obtain penetration, and if the Americans merely desire such an effect, we can only say that they have set about its accomplishment with a singular want of intelligence and scientific knowledge. (!) *The truth is, however, that they desired no such effect, nor aimed at obtaining it, (!)*"

And finally the conclusion of this remarkable discussion is that "the present American system of big smooth bore guns is purely a make-shift and a temporary system" because no doubt as this Bunsby on ordnance observes, "they absorb so much power in producing a partial penetrative effect that the remaining *balance of power* is insufficient to strain and seriously damage the structure."

The more absurd portions of these extracts are italicized and it is improbable that in all the writing in foreign journals on American ideas or systems, that more ignorance of fact has been exhibited or more eroneous conclusions formed than in this article, published as it is in one of the most intelligent journals in Europe and the one, *par excellence*, which pretends to be the best informed on American affairs.

It will be observed that the assumed *low* velocities of the big smooth bore's shot and the assumed *high* velocity of the gimlet projectile from the English 9 inch rifle, together with the idea which he gratuitously and untruthfully tacks on to the American system, that it was designed for "racking effect" and not for "penetration," is the foundation on which the *Pall Mall* and other English writers have constructed their card board house on American ordnance.

Let us glance at the subject of the comparitive *velocities* and *vis-viva* of the shot of the rival guns, and then at the "racking" business. It will then be seen how woefully ignorant the English writers are, on a subject which occupies so much of their time and has demanded so much investigation.

After the three rounds with the 15 inch gun, mentioned in the last issue of the SCIENTIFIC AMERICAN, had been fired against the target, the 9 inch Woolwich rifle—the crack gun of the British navy—was pointed towards it. The following was the result: weight of shot 250 lbs—velocity 1,337 feet per second—charge 43 lbs of English powder. Energy of the 250 lb shot, moving at 1337 ft. per sec. is equal to a force of only 6,930,500 pounds acting through a space of one foot or only 161,197 foot pounds for each pound of powder. Referring to the previous trials with the 15 inch gun, (and, in order that the comparison may be more exact, selecting a round when the same English powder was used) it is seen that with a shot weighing over 450 lbs. a velocity of 1,214 feet per second was obtained with but 50 lbs of the same powder as was used in the rifle. Hence we have a resulting dynamic effect equivalent to over 10,328,400 pounds acting through a space of one foot against an energy of but 6,930,500 pounds acting through the same space developed by the English rifle and while we find a pound of powder in the 9 inch rifle was exerting but 161,197 foot pounds, a similar quantity in the 15 inch was developing more than 206,570 foot pounds. In order still further to illustrate the superiority in power of the 15 inch smooth bore over its rival, the 9-inch rifle, it will be only necessary to state, that with its service charge of 60 lbs American powder, such as is directed by the ordnance circular to be used, it imparts a force of no less than 13,500,000 of foot pounds to its projectile, against 10,328,400 the maximum developed by the same gun on the English trial ground. It is of course very clear that if 3,172,000 foot pounds more energy had been imparted to any of the 15 inch balls on the late trial, they would have riddled and smashed or "racked" if the *Pall Mall* prefers, this formidable target. Even Shoeburyness jockeying could not prevent this result.

Lastly, respecting the gibberish of the *Pall Mall* machinist concerning "racking" and "racking system" and that the Americans "desired no such effect" as penetration, it will be well to observe, both for his own and the information of the rest of the British journalists who have industriously circulated this foolish opinion, that such a stupid idea as that of defeating an iron clad by "racking" her, is one which has never been entertained by either branch of the American service. The word "racking," while it is scarcely, if ever, heard among artillerists on this side of the water, seems to have been seized upon by the English engineers and industriously used to conceal their ignorance of the principles of the large smooth bore system of ordnance. N.

Steam Gong

In reply to several correspondents asking where the steam gong can be obtained, we would say that the article is made by the Steam Boiler Feeder Company, of Worcester, Mass. It produces two tones, not harsh like the whistle, but musical and pleasing. It has been heard thirty miles, and can be applied to any common boiler, and only a small quantity of steam is required to sound it. Abraham Fitts is the inventor of this gong. It was patented more than two years ago through the Scientific American Patent Agency, and has been frequently noticed or advertised in our columns.

Correspondence.

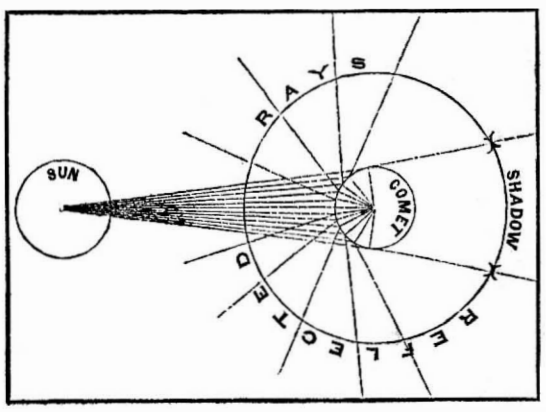
The Editors are not responsible for the opinions expressed by their correspondents.

Are the Tails of Comets Reflected or Refracted Light?

MESSRS. EDITORS:—In Vol. XVII., No. 8, page 82, of the SCIENTIFIC AMERICAN, Dr. G. M. Ramsay contributed a very interesting article about the nature of the tails of comets. He supposes that they are nothing else but rays of light reflected from the comet.

The theory that the tails are rays of light, might prove to be correct, but the question arises, is it reflected or refracted light? We intend to show with the diagram, that it cannot be reflected but must be refracted light. We suppose the comet to be spherical; the reflerted rays are drawn according to the law of reflection, and consequently are reflected fan-shaped toward the sun, leaving a vacant space in the rear of the comet, marked in diagram, "Shadow."

Now as it is a general rule, that the tail of a comet is always in opposition to the sun, whether the comet is approach-



ing or receding from it; the light cannot be reflected, or else the tail would spread out towards the sun. Furthermore, if we suppose that the rays are reflected, we must also admit that the body of a comet consists of a solid and ponderable substance, capable of reflecting light Now as we know that the tail of a comet is always in opposition to the sun, and as it is generally supposed that the comets consist of an imponderable, gaseous, or vaporous substance, not capable of reflecting light, we believe that the tails of comets are, as Dr. Ramsay has so nicely explained, rays of light; however not reflected, but refracted, rays. If this proves true, then the comets, unlike the planets of the solar system, are gaseous or vaporous bodies, moving as immense lenses through the solar system, refracting the rays of the sun to the rear (filling the space marked "Shadow" in diagram with refracted light), and so forming the once so much feared tail.

AUGUST WILHELM.

Philadelphia, Pa.

Tin in Missouri.

MESSRS. EDITORS:—The tin-ore district of Missouri is at present confined to the six townships in Madison County, numbered 3, 2, 5, 6, and 7 east 5th P. M., and 33, 5, 6, and 7, east 5th P. M. There are indications in other towns and counties not yet much examined.

The ore is found in beds and veins of greater or less extent, the largest being in towns 33, 5, and 6. The ore is found in the form of oxide and sulphuret, associated with tungsten and its ores, copper, iron, soapstone, kaolin, asbestos, and serpentine. The largest veins have a bearing east of north and south of west, with cross veins at various angles and dykes at nearly right angles. The ores are so abundant and so easy of access, in a heavily timbered region, well supplied with water power afforded by the St. Francis river and its tributaries, that it is a very inviting field for the man of energy and the capitalist. The country is healthy, mountainous, with rich valleys, railroads built and building, and near the Mississippi. The Iron Mountain Railroad is within a few miles and about to be extended, which will afford communication with the cities north, south, and east. The great amount of mineral of various kinds and the extensive pineries and forests of red cedar and other valuable timber are great inducements to emigration. The most extensive deposits of tin ore and other minerals are on government lands subject to entry at $1.25 per acre, at the office in Ironton, Mo., which office will be open in a few days. No pretended entries lately made at this office are good, as there has been no Receiver there for some months.

The existence of tin ore in this region has long been suspected, and rude attempts at smelting have been made by the early settlers at various times, and the remains of an old furnace are to be seen which was probably used centuries ago. A shaft was sunk by Prof. Swallow's men, when making the geological survey of the state, in Town 32, 5, from which some asbestos was taken by the workmen. In 1862 or '63 a gentleman with Dr. Koch, of St. Louis, on examining further in this shaft, found some slight evidences of tin ore, soon after which Mr. Lane leased this land and bought the Lloyd farm, adjoining. On each of these tracts are veins of tin ore and its usual associates.

In 1858, some specimens were obtained by Dr. John Farrell from adjacent towns, which afforded traces of tin. The search for a workable vein has been pursued, with the interruption by the rebellion, at various times since, with little result, until in May, 1867, when in Town 33, 6, large beds and veins of tin ore in its different forms were discovered, with its associates, tungsten, talc, etc., etc. It is greatly to be desired that these lands go into the hands of energetic capitalists, that the state and whole country be speedily benefitted by their full development. Parties are invited to examine south-eastern Missouri, for unusual mineral and other natural wealth. J. F.

The Prussian Patent Laws.

MESSRS. EDITORS.—In No. 4, Vol. XIV, is an article on the Prussian patent laws which is not quite correct and may, if not explained, operate to the detriment of American inventors.

The existing patent law of Prussia bears the date of June 1843, not of 1815, and can be found in the body of laws published July 11th, No. 23. Foreigners can procure patents as well as natives; they must make application through a German—citizen of the Zollverein, not a Prussian, merely—as the states of the Zollverein have an arrangement between them, by which a citizen of any of the states may receive patents in all others, and if he has a patent in one state he has the preference for his invention in all the states.

The patents for foreigners are not taken out in the name of the German only, but also in the name of the foreign inventor. The form for applications ("communications") is about the same as in England; it purports that a patent is to be granted to a citizen of Germany for the foreigner. It is not correct that only six months are allowed for introducing the invention; for inventions difficult to introduce, a year is allowed, and that term may be prolonged if good reason is adduced. Prolongation s granted, also in the other states, so that inventions may often remain two or three years before being introduced.

The protection, it is true, is not certain enough for all inventions, as machines and tools, only, are exclusively protected; for articles of common use, therefore the protection is insufficient; but you may, nevertheless, be wholly protected if you take out patents in all Germany; as the law forbids the manufacture of articles thus protected they can be made nowhere without your consent. The time is really too short, but for the greater part of inventors it is sufficient.

The reform of the patent laws is proposed to parliament and probably a longer time will be granted under the new code. In Austria and Bavaria the period is fifteen years; in Saxony and Wirtemberg, ten years, and in some cases the term is extended. In these countries, containing a population of 52,000,000, most patents are as easily obtained as in the United States. It is true the principle followed by the Prussian Government retards many inventors, but there is reason to believe the new parliament will enact a more liberal law, probably fixing the term at fifteen years; meanwhile inventors should lose no time in securing their inventions, especially for machines and tools. W.

Frankfort-on-the-Main.

Illuminating Gas from Naphtha.

MESSRS. EDITORS:—In your valuable paper of Aug. 17th, in an article on the "Dangers of Gas made from the Volatile Constituents of Petroleum," I think an unintentional error has been made in regard to the Gloucester, Mass., fire and explosions. The facts, as furnished by Mr. Dale himself, are these: The gas not burning with its usual brilliancy, an examination of the machine was made, and, believing that it was too full, a portion of the gasoline was drawn off in open pans in the cellar, and the vapor was lighted by the lantern used as a light in removing it; this on fire, the alarm was given for the firemen. The fire was, however, extinguished before their arrival. The firemen rushed in with lanterns, against the entreaties of Mr. Dale and his friends, and the vapor was again and again set on fire and explosions were the result. The machine is rendered useless by the burning, and although the bands were burned off, there was not the slightest explosion in the machine or contents therein. Mr. Dale further writes that he has used it since 1864, and will replace it with a new one, his faith in it being undiminished. Fifty dollars will repair the damage to the house. In suburban places a substitute for petroleum lamps is very much needed, and it is believed that American inventors can furnish an excellent and safer one. J. L. DOUGLASS.

New York city.

A Challenge to Watchmakers.

MESSRS. EDITORS:—I state to the watchmaker world that I can produce an eight-day watch, of the size of an English one-day lever, that varies less than any eight-day watch that can be made with one balance. The trial is to include all the offices that the perfect watch has to perform. We have "hunter case watches;" why not use them as hunters do their watches, on horseback. J. MUMA.

Hanover, Pa.

Effect of Our Fifteen-Inch Projectiles.

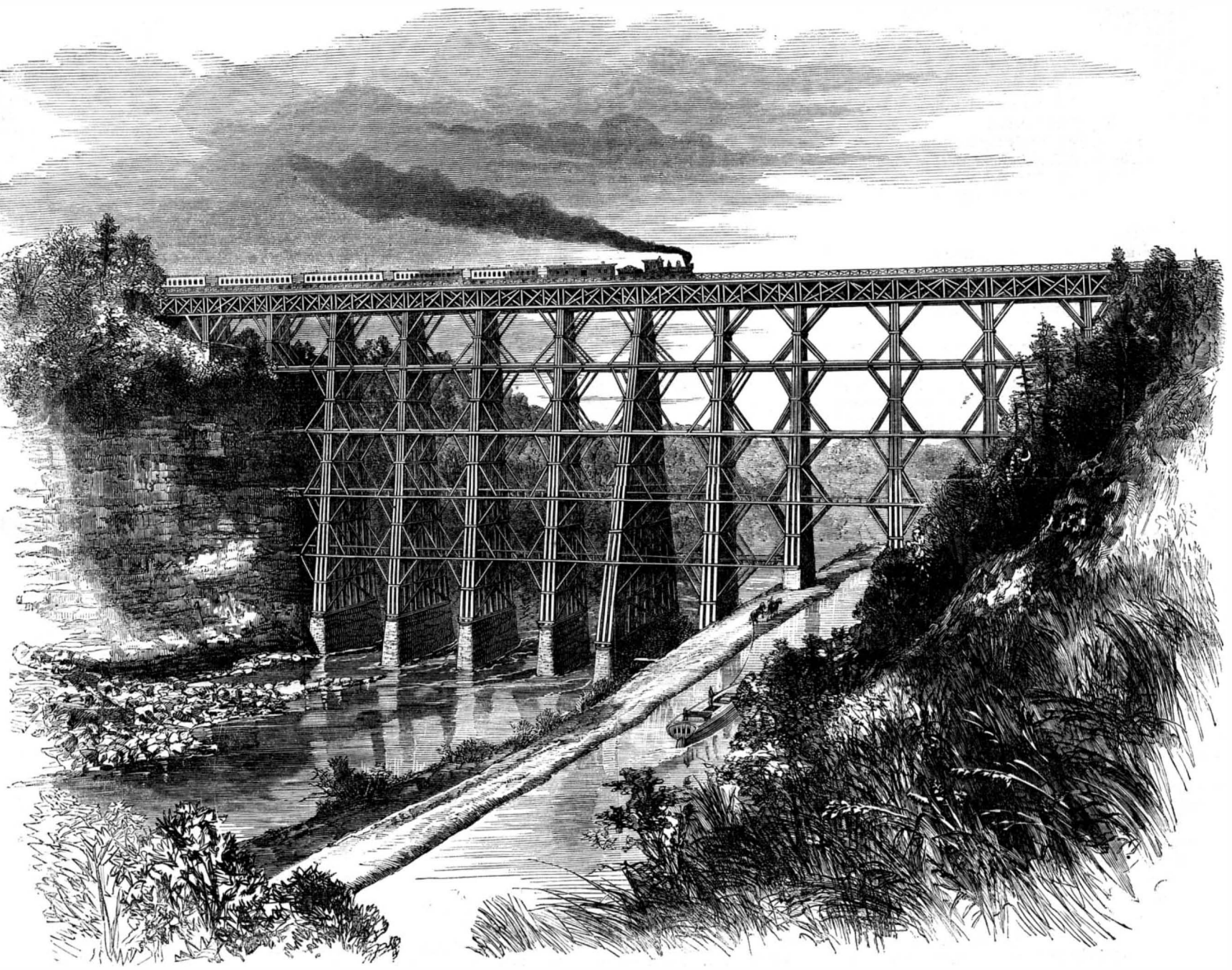
During Admiral Dupont's attack on Fort Sumter the rebel records show that the fort was struck over fifty times by our large projectiles. There are some ten instances noted in which the shot penetrated between two and three feet, and two cases in which they penetrated five feet. In half a dozen cases the projectiles made craters above five feet in hight and from four to eight feet in width. In another case a shot made a crater ten feet in hight and eight feet in width, and the parapet wall at this point was cracked twenty-five feet in length.

WE are indebted to Geo. W. Childs, Esq, proprietor of the Philadelphia *Ledger*, for a very beautiful framed picture of the Ledger Buildings. The artist is F. Gutenkunst, one of the best photograhers in the country.

© 1867 SCIENTIFIC AMERICAN, INC.

Erie Railway Bridge at Portage.

Probably there is no line of railway on the continent that surpasses the Erie road in variety of scenery; and though the traveler passes repeatedly over it, he will still be greeted with fresh surprises. The peaceful meadows, cultivated fields, cosy homes, and pretty villages alternate with dark forests, dashing waterfalls, beetling crags, and frowning mountains. Apart from these charms, the magnificent structures by which the engineer has overcome what would appear at first as insurmountable natural obstacles, are objects well worthy the observation of the tourist. Among these is the bridge across the Genesee and the canal at Portage, a view of which is given in the engraving. It is doubtful if it is surpassed by any



RAILROAD BRIDGE ACROSS THE GENESEE RIVER AT PORTAGE, NEW YORK.—ERIE RAILWAY.

wooden structure, erected for a similar purpose, in the world.

It is erected on thirteen stone piers set in the bed of the river, the stone being built sufficiently high to avoid all danger of freshets. The bridge itself is a huge mass of timber, rising to the height of 234 feet and is 800 feet in length. It was completed in 1853. It is said to be so constructed that any timber in the bridge can be removed and replaced at pleasure.

The scenery at this point is wild and picturesque. The Genesee River enters the ravine only to seek lower and still lower depths. Directly below the bridge and in sight of the cars, is the first fall, a half horse shoe about forty feet high, and a quarter of a mile further to the north is another fall, one of the most beautiful cascades in America. The fall is 80 feet high, and when the water is low the appearance is that of a most exquisite veil of lace thrown out in front of a black rock.

The Manufacture of Iron and Steel by Means of Magnetism.

In a literary cotemporary, Mr. W. Robinson gives a detailed account of his patented process for manufacturing iron and steel by means of magnetism. At present we do not see any reason to doubt the results which he therein states that he has obtained; but we do think that he has failed to give the *rationale* of that process, which, of course, in the description of any process, is the thing strictly necessary to be set forth, else such process naturally falls into the category of empyricisms, and not into that of science as applied to art and manufacture. Still, if the results be good, there is no reason why the process should not be followed, providing it be economical. But Mr. Robinson says that he did not fall upon this process by accident, but after lengthened research; consequently, one naturally looks for something like a scientific exposition of it. He says that the object of his research has been the practicability of making wrought iron by the aid of the magnet instead of the laborious, tedious, expensive, and somewhat uncertain process of puddling. The facts that led him to believe that such was practicable were the following: He found that some files by using became magnetic, and that such files always lasted much longer in use without showing signs of being worn than others; but he has not been able to ascertain how this magnetization comes about. We think if he tries he will find out that any file will become slightly magnetic if he draw-files with it, and not only so, but that any piece of iron or steel will become magnetic if it be filed while it is being turned in the lathe. Another principal fact was, that he found when a compact mass of iron filings were formed between the two poles of a magnet and then broken by force, the appearance was exactly similar to the fracture of a bar of tough iron. These and other facts led him to try the experiment of applying a magnet first to castings while being poured and till consolidation, and then to the melting furnace. In the first instance the castings were bright, like newly cast lead, and would bear riveting when cold, while other castings from the same ladlefull of metal were the ordinary gray, and brittle. In carrying out the process in the furnace to replace the puddling process, two pieces of iron were built into the furnace so that their inner ends might be in contact with the melted metal, and their outer ends in contact with the poles of a magnet. When the metal was in a melted state and a magnet applied, the magnetic arc was shown through the melted metal by blue flame and intense ebullition, and in twenty minutes the iron was gathered into a ball, and this iron when rolled was of the finest quality.

Now, suppose there to be no mistake about these results, what is the mode in which the magnet acts upon the crude iron? The mode in which the same or a similar result is arrived at may help us to an explanation. The two principal methods of turning crude iron into malleable iron and Bessemer steel is by the oxidation of the carbon and other matters out of the crude iron. In the puddling process successive portions of the melted iron are brought to the surface by stirring, and into contact with the air till the greater portion of the carbon passes off in the form of carbonic acid gas, etc., and the same thing is obtained much more readily and perfectly by the Bessemer process, by forcing the air through the melted metal. Now, we believe that it is an established fact that crude iron cannot become malleable till the carbon is driven off; therefore, if magnetism produces malleable iron from cast iron it is by driving off the carbon in some way; but if it be driven out it must be in the gaseous form. To render carbon gaseous oxygen is necessary, and it so happens thot among the gases oxygen is a paramagnetic; therefore, in the magnetic sphere there will be a concentration of oxygen. But this will not account for the oxidization of the carbon unless it can be shown that the carbon is brought in contact with the oxygen. On the surface it will be brought in contact with a condensed atmosphere of oxygen, but without stirring how is the carbon which is mixed or in combination with the metal below to be reached? There seems to be but one way of accounting for it, viz., this:—The particles of iron being magnetic, but the particles of carbon not being so, the particles of iron are necessarily colligated together when under the action of the magnet; and the carbon squeezed out, the carbon will necessarily rise to the surface and there burn, which it apparently does, from what Mr. Robinson says producing a great heat and intense ebullition of metal, and even melting the lining of the furnace and the bricks. What ever the mode of operation may be, the results being as stated —and we see no reason to doubt them—this method of converting crude iron into malleable iron is by far the simplest and most economical yet discovered. Mr. Robinson has not yet been able fully to carry out his process; existing trade interests have worked against him; but that is what every inventor must expect—at least, in England. "Vested interests" are all-powerful for obstruction.—*Mechanics' Magazine.*

Honey, it is well known when taken fresh from the comb is a clear yellow sirup containing no trace of solid sugar. Upon straining, however, it assumes a crystalline appearance, and finally becomes a solid lump of sugar. M. Scheibler has found that this change is due to photographic action, crystalizing only when exposed to the light. This explanation furnishes us the reason why bees are so careful to work in perfect darkness, always carefully obscuring the glass windows which may be placed in their hives. The young bees can feed on the liquid honey only, and if light were allowed access to it, the sirup would gradually acquire a more or less solid consistency sealing up the cells and in all probability proving fatal to the inmates of the hive.

Vitality of Seeds.—The manner in which species of the floral kingdom are accidentally disseminated over wide regions, is shown by the fact that in the Exposition gardens a great variety of plants foreign to France have spontaneously sprung up under the walls and around the building. The seeds from which these new acquisitions to the natural flora have germinated, were conveyed to Paris in the packing of the articles sent from various countries. The several plants around the house of "Gustavus Vasa," which are peculiar to the country of that monarch, from their rare beauty are attracting considerable attention.

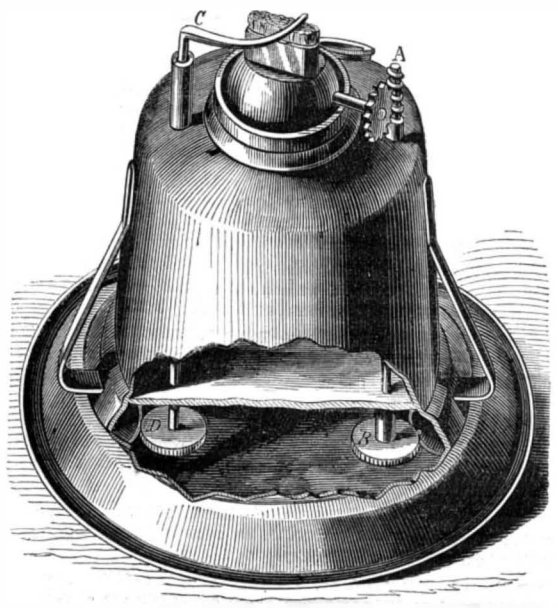
The Commissioner of Patents' Journal published weekly in the British Patent Office in London, contains the claims of all the patents issued in the United States.

© 1867 SCIENTIFIC AMERICAN, INC.

SILVINS & HAIN'S IMPROVEMENT IN LAMPS FOR LANTERNS.

Those who are compelled in their business to frequently use lanterns, as watchmen, farmers, and some railroad employés, understand the annoyance of a dimply burning lantern lamp when its light is most needed on a stormy or windy night. Under such circumstances it is impossible to trim it or to elevate the wick without getting into some shelter for the purpose. But in the engraving we have a device by which these operations can be performed under almost any circumstances, and without removing the lantern from the protection of its glass case.

The engraving represents an ordinary lantern lamp secured to the lantern in the usual way by springs. A portion of the side and bottom projecting flange is broken away to expose the working parts. Through a tube reaching from



top to bottom is passed, on one side, a wire shaft having a worm gear, A, on its top for working the wheel, by which the wick is raised or lowered, as on an ordinary kerosene lamp. By turning the thumb-wheel, B, under the bottom, the elevation of the wick can be governed. On the other side of the lamp is a similar shaft, having on its upper end a curved horizontal arm, C, that can be swept across the wick to remove any crust which may have gathered. This is turned, also, by a similar thumb knob, D. By these simple contrivances it will be seen that, except filling the lamp anew with oil, it can be trimmed in a storm as well as in a calm.

The device was patented through the Scientific American Patent Agency, June 11, 1867, by Jacob Silvins and William T. Hain, who may be addressed at Sunbury, Pa., for further particulars.

A New Cement and Building Material.

In a communication to the French Academy of Sciences, M. Sorel describes a new cement, being a basic hydrated oxychloride of magnesium. It is obtained by slacking magnesia with a solution of chloride of magnesium in a more or less concentrated state. The denser the solution the harder it becomes on drying. This magnesium cement is the whitest and hardest of all those known to this day, and it can be molded like plaster, in which case the cast acquires the hardness of marble. It will take any color, and has been used by the inventor for mosaics, imitations of ivory, billiard balls, etc. The new cement possesses the agglutinative property in the highest degree, so that solid masses may be made with it at a very low cost by mixing t up on a large scale with substances of little value. One part of magnesia may be incorporated with upwards of twenty parts of sand, limestone, and other inert substances, so as to form hard blocks; while lime and other cements will hardly admit of the incorporation of two or three times their weight of extraneous matter.

By means of these artificial blocks, buildings may easily be carried on in places where materials for the purpose are scarce. All that is required is simply to convey a quantity of magnesia and chloride of magnesium to the spot, if there be none to be had there, and then to mix them up with sand, pebbles, or any other matter of the kind close at hand; blocks can be made of any shape, and imitating hewn stone. This magnesian cement may be obtained at a very low cost, especially if the magnesia be extracted from the mother ley of salt works, either by M. Balard's process, whereby magnesia and hydrochloric acid are obtained at the same time, or else by decomposing the ley, which always contains a large proportion of chloride of magnesium, by means of quick lime, which by double decomposition yields magnesia and chloride of lime containing a certain quantity of chloride of magnesium, and which, with the addition of various other cheap substances may be used for whitewashing.

Storage of Petroleum in England.

A select committee of the House of Commons on protection from fire has recommended that no oil produced by distillation from coal, shale, peat, petroleum, rock oil, Rangoon or Burmah oil, or other bituminous substance, and used for illuminating purposes, should be sold for such purposes with an igniting point under one hundred and ten degrees Farenheit.

"The committee point out that stringent measures have been adopted in America as to the sale of petroleum, and add that there is reason to fear that much of that oil, with a low igniting point, will be imported into England. They suggest that it would be well to have all mineral oils imported tested as to their igniting point and marked before being stored, and to place careful restrictions on the mode of storing, The classification of goods in storing is also recommended for consideration."

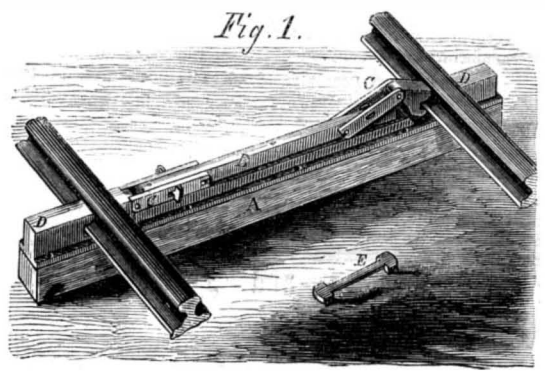
A Manchester paper, commenting upon this report, says:—

"Petroleum has already been the object of legislation. By an act passed a year or two since it is directed that not more than forty gallons shall be kept within fifty yards of a dwelling house, or of a building in which goods are stored, without a special license. But this act goes on the assumption that the igniting point of the oil is one hundred degrees Farenheit. The great source of mischief, however, is the use of petroleum which ignites at a point below that limit. Some of the petroleum which is sold is capable of ignition at a point as low as sixty-eight degrees. Moreover, it has been shown that in some cases, after a mineral oil lamp has been burning for twenty minutes, the temperature of the brass ranges from one hundred to one hundred and ten degrees, so that even when the flame is blown out the heat of the brass part of the apparatus is more than sufficient to explode the vapor which is given off. In the United States a law has been passed imposing heavy penalties on any one selling petroleum oil for illuminating purposes which is inflammable at a less temperature than one hundred and ten degrees Farenheit; and as far as we are concerned, the effect of this and other restrictions has been to stimulate the export of the forbidden oils to this country."

HOLLAND'S PERMANENT WAY.

In England great attention is being paid to improving the condition of the railroads by the construction of a permanent way not liable to decay, displacement, or breakage. The sub-

Fig. 1.



ject is also very properly assuming some importance in this country. In time, it is confidently believed, our present system of cheaply laid and rapidly decaying roads will be superseded by others of an enduring character. The engraving represents an attempt of this sort, which was patented July 16, 1867 by Robert M. Holland of Philadelphia.

Fig. 2.

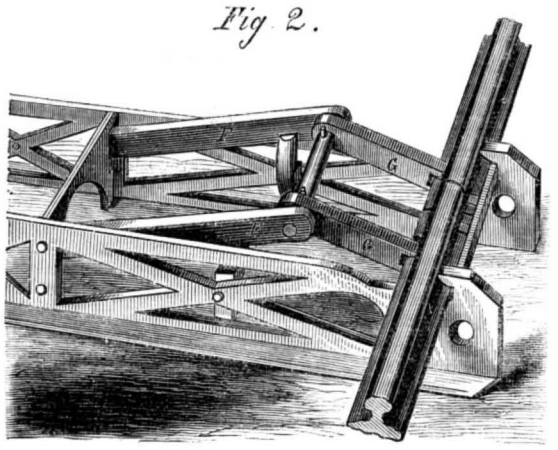


Fig. 1 presents a view of a sleeper with the iron attachment for securing the rails in place, and Fig. 2 a girder to be used at cuts, culverts, etc. The sleeper, A, may be of wood, as usual, having the casting secured to the top, or it may be wholly of iron with a broad base. A central rib, B, rises from the plate between the rails, having, at a proper distance from each rail, a pivot projecting from each side with which engage links, C, on either side of the rib. These links are pivoted to blocks formed with upper and lower flanges, and shaped so as to accurately fit the side of the rail. The ends of the plate are similarly formed, as at D. It will be seen that when the links are pressed down into position the rail, or the ends of two rails, will be held with great steadiness. To give perfect security a key is passed through a slot in the links and the rib and turned partially around, so the heads may stand across the slot. The key is seen removed at E. It is not believed, however, that this key is absolutely necessary to retain the block and links in position. At one end of the sleeper, Fig. 1, the links are seen raised so that the rail can be removed or seated, and at the other end they are locked.

Fig. 2 is a frame or girder of cast iron showing the rails in place. The links and blocks, F and G, are shown quite distinctly. It is evident that with these devices no spikes are necessary to fasten the rails, nor are any chains required to hold their ends. The labor of laying and repairing tracks will thus be materially reduced.

Further information may be obtained by addressing Leonard Repsher, Camden, N. J.

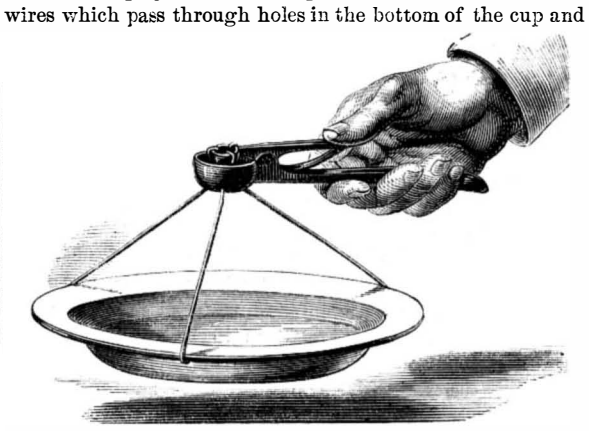
Trial of McCormick's Reaper at Chalons.

Mr. McCormick having accepted an invitation from the Emperor Napoleon to give a private exhibition of the working of his reaping machine, a trial was made a short time since on the Imperial farm near Chalons, at which the Emperor was present, accompanied by Marshal Neil, General Le Beuf and Tisseraud, Director General of the Imperial Agricultural Estates. The trial was a complete success, and gave so much satisfaction to the Emperor that he immediately gave orders for the purchase of three of the machines for use on his private farms, and earnestly expressed the intention of encouraging the adoption of the invention throughout France, on account of its great labor-saving properties, and said that he would set the example by putting it in operation on all imperial farms. Such distinguished attention as this has been shown to no other foreign exhibitor, and it is considered certain that to Mr. McCormick will be awarded the highest honors of the Exhibition.

WILLETT'S PLATE LIFTER.

The engraving presents a view of one of those handy household implements for which American inventors have become famous.

It is a light handle of cast metal having a cup-shaped receptacle, at the end, and just behind that cars for the reception of a thumb lever which is there pivoted. The short end of this lever projects into the cup and has secured to it three wires which pass through holes in the bottom of the cup and



are bent into hooks at their outer ends. The long end of the lever is kept up by a curved spring except when depressed by the thumb, The engraving shows plainly the manner of using. The wires are placed over the rim of a plate—being spread to their full extent by the spring—when the thumb presses the lever down contracting the hooks toward the center and holding the plate firmly.

One obvious advantage of this over those which grasp the utensil at one point only, is that it is not likely to drop the plate and can be carried steadily without spilling the contents of the vessel. It is made of such materials, also, and is so simply constructed as not to break or get out of order. Patented June 4, 1867. State and county rights and samples can be procured by addressing the patentee, John B. Willett, West Meriden, Conn.

The Silver Mint of Japan.

At the silver mint at Yeddo the following processes are continually going on:—A lump of silver of the necessary fineness, obtained either from the government mines or by melting down Mexican dollars, is placed in an iron ladle and reduced to a molten state by means of a charcoal fire and a pair of blacksmith's bellows. It is then poured into a mold, from which it is taken out in the shape of thin rectangular bars, which are immediately thrown into a tub of cold water. On being taken out a man seated on the ground shears off with a pair of large fixed scissors all jagged pieces adhering to the angles. They are now handed to another man who weighs them one by one, and a piece is cut off, if necessary, to reduce the bar to its proper weight. The next process is that of dividing the bar by a fixed pair of shears into eight equal portions, of the size of ichibus; this is done by a workman cutting it as accurately as his practised eye will enable him, and his work is tested by weighing—light pieces being rejected, and the heavy ones reduced to their proper weight by the scissors. The pieces are now heated white hot in a charcoal fire, plunged into water, boiled and washed in a kind of brine, from which they come out with a moderately bright surface. They are next very slightly milled on the two sides, and more deeply on the edges, by means of a milled hammer. They are now ready for stamping. A man places one of the pieces on a stationary die, and lays on the top the other die; a second man, armed with a huge hammer, gives one blow on the upper die, and the coin is struck. The blows are dealt in rapid succession, and the whole scene reminds one of a blacksmith's shop. Boys now punch small stars on the edges by means of chisels and hammers. The coins are weighed one by one for the last time, and the light ones rejected. The imperial stamp is added by means of another stamped chisel and mallet, and the coins are complete. They are rolled up in paper packets of one hundred; each packet is weighed and with a seal, which serves as a guarantee of its contents, and gives it currency as one hundred ichibus. While every operation is performed in this primitive manner, perfect order prevails in the estalishment; every man goes through his portion of the work in silence and with the regularity of clockwork, and many evince considerable skill. There are about three hundred hands employed in the building. When the men enter in the morning they are made to divest themselves of their own clothes, and put on others belonging to the mint. At the end of the day's work a gong sounds, when the somewhat curious spectacle is presented of three hundred

© 1867 SCIENTIFIC AMERICAN, INC.

men springing from the ground on which they had been seated, throwing off their clothes, and rushing, a naked throng, to one end of a yard. Here they pass through the following ordeal in order to prove they have no silver upon them: Their back hair is pulled down and examined, they wash their hands and hold them up to view, they drink water, and then halloa, and, lastly, they run to the other end of the yard, clearing two or three hurdles on their way; after which they are allowed to put on their own clothes and depart. Mr. Sidney Locock, Her Majesty's Secretary of Legation, from whose report of this year these statements are taken by the *Times*, believes that the mint has been only twice entered by foreigners, and states that the apparent absence of all restrictions with regard to touching and handling the coins points to the probability that it is not often open to the public; but he remarks that even if it were, the manners and customs of the country are not such as would preclude a mixed assemblage of visitors from going over it and remaining to the end. The quantity of silver being coined daily at the beginning of this year was fifty thousand momme, which, at the rate of 2·3 momme to the ichibu, would give a daily total issue of over twenty-one thousand bus, or about £1,500. The whole of these are produced by the simplest manual labor, unaided by a single piece of machinery.—*Mech. Magazine.*

Editorial Summary.

THE CO-OPERATIVE CONGRESS.—An International Congress of co-operative societies is to take place in Paris on the 16th, 17th, and 18th of this month. All persons who take an interest in the co-operative movement are elligible as members of the Congress. Foreign members assisting at the Congress will be permitted to speak in their native language, and their speeches will afterwards be explained to the meeting by interpreters appointed for the purpose. Each member of the Congress is to pay a subscription of ten francs. The following are the subjects fixed for discussion: 1st. The distribution of profit in co-operative societies, and the system adopted for the moral and material prosperity of their members. 2d. The relations to be established between the societies of France, and also between the French and foreign societies. 3d. The advantages and means of inducing the agricultural population to join the co-operative movement. 4th. The introduction of the co-operative system in education. 5th. The liability of members of co-operative societies for amounts exceeding those of their shares. The sittings of the congress are to be public.

NEW USE FOR ALUMINUM.—It is well known that paper is one of the best substances for dulling steel cutting or piercing instruments, and especially is this the case when the paper is gummed, as in sheets of postage stamps. To make the rows of holes which nearly divide the stamps, in the French postage-stamp manufactory, a machine is used provided with some 300 needles of tempered steel, which latter fit into holes in an under plate of tin bronze. In the course of a single day the perforated bronze plate becomes unfit for use, the holes being so worn that the paper instead of being pierced, is merely embossed. M. Hulot, the director of the mint, has substituted aluminum bronze for the common alloy of copper and tin, with the best results, the lower frame lasting as many months as before it did days.

ALL WORK AND NO PLAY.—Aristotle says that the end of labor is to gain leisure. It is a great saying. We have in modern times a totally wrong view of the matter. Noble work is a noble thing, but not all work. Most people seem to think that any business is in itself something grand; that to be intensely employed, for instance, about something which has no truth, beauty, or usefulness in it, which makes no man happier or wiser, is still the perfection of human endeavor, so that the work be intense.

MISSOURIAN MAMMOTH VEGETATION.—A sycamore tree in Mississippi County, Mo., has a trunk forty-three feet in circumference. Another in Howard county is thirty-eight and a half feet in diameter. A cypress in Cape Girardeau county measures twenty-nine feet in circumference. A black walnut in Benton county is nearly eight feet through. There is a willow in Pemiscot county that has grown to the size of twenty-four feet in circumference and one hundred feet in hight. In the same county there is a dogwood six feet in circumference. Mississippi county boasts of a sassafras three feet in diameter, and grape vines and trumpet creepers grown to a circumference of eighteen to twenty-two inches.

MANUFACTURING, MINING, AND RAILROAD ITEMS.

The question of the manufacture of iron is now attracting considerable attention in South Australia, the iron ores of this colony being unbounded in quantity, lie close to the surface of the ground, and are of extraordinary richness, some of them even of 90 per cent. The scarcity of coal for smelting, is compensated for by the inexhaustible forests of wood. Even if coal had to be imported from New South Wales, the extreme richness of the ores would doubtless more than make amends for the extra cost of fuel.

The Brenner railroad across the Tyrol Alps, and running from Innspuck to Botzen, was to have been opened about the middle of the present month. This road opens a new and direct connection between Italy and central Germany.

The new canal around the Des Moines Rapids on the Mississippi is to be two hundred and fifty feet wide.

Railroad men lately visiting Colorado have proposed building and stocking a branch road from the Central Pacific to Golden city and Denver, if the Colorado people will do the grading, this latter expense amounting, perhaps to $600,000. Gilpin county promises to contribute one third of this sum and the road will without doubt be built.

The manufacture of jewelry in France is continually on the increase. Paris is the center of the trade but there are great branches of it at Lyons, Marseilles and Besancon. A great lapidary trade has arisen, moreover, in Jura. The quantity of gold annually used by French jewellers and goldsmiths is estimated at seventeen tuns, while the manufactured silver amounts to eighty-nine tuns.

The bituminous coal from mines in Hopkins county, Ky., has been tested under the direction of the Louisville Board of Trade, and is pronounced equal to the Pittsburg coal for the manufacture of gas, making a purer and better heat and burning up better.

The works and village of the A. & W. Sprague manufacturing company at Baltic, are situated partly in Franklin and partly in Lisbon, and run 1,973 looms, and 76,000 spindles. The manufactures are print cloths and light shirtings, of which, 1,487,480 yards, in 37,187 pieces were turned out in May, this year. If joined together, this product would reach over 845 miles.

Jasper is now procured to almost any required extent, at St. Gervais, in Savoy, where the quarry has a surface of at least 24,000 square yards, and a depth of about twenty-two yards.

Railroad rails are not made in Italy. Eleven years ago attempts were made to supply them at the establishment of Pietrassa, near Naples, but it was found that they could not be delivered at less than double the price of those imported from England or Belgium. Neither can chairs, turn tables, etc, be manufactured cheaply enough to compete with similar articles of foreign production.

Within sixteen years the two colonies of Victoria and New South Wales have produced a gold supply valued at £150,000,000 sterling. The yield of Australian gold for the year 1866 was exactly one half that of 1856, and during these ten years the product has steadily declined on an average of over a half million of pounds sterling per year.

A farmer in Fulton, Wis., lately cut over thirty-two acres of standing wheat, with a Clow reaper, in one day. Considering that this work was done with a single pair of horses, and the thermometer indicating over 90°, the feat stands without a parallel in the history of reaper trials.

The yield of the Galena, Ill., lead mines which are the principle ones of the country, has largely diminished of late years. In 1842 they produced 31,353,690 pounds of pig lead, the average price of which was $2 24; in 1845 the production was 54,494,860 pounds which sold for $2 96; the production from this time forward, steadily decreased up to 1855 when it amounted to only 30,125,550 pounds at $6 00. Since the year 1848 we have been dependent on foreign countries for the bulk of lead used in this country, and strong efforts have been made to have pig lead placed on the free list. In 1857 the duty was reduced from 20 to 15 per cent and under the present tariff it is two cents per pound.

The first steel tires manufactured in this country were made at the works of William Butcher in Philadetphia.

Dr. H. E. Tweddles of Pittsburg, Pa., has patented a new process of manufacturing oil whereby all the hazard and risk attendant upon the use of fire in distilling the crude petroleum, and the expense and nuisance of subsequent purification by acids and alkalies, are entirely avoided. Steam is the only agent used, and it is uterly impossible to ignite the oils during the operation. But six or eight minutes is required to convert crude into refined oil.

The Worcester (Mass.) *Spy* says that every thing from a pin to a steam engine is manufactured in that city.

A locomotive on the East Pennsplvania railroad recently passed between Allentown and Reading, a distance of thirty-six miles, in exactly thirty-five minutes.

The California *Alta* claims that, contrary to the generally received account—which accredits to Marshall, the discovery of gold in that country in the year 1847—Abel Stearns, a native of South Carolina, as early as 1840 sent twenty ounces of the precious metal taken from a spot some eighteen or twenty miles from the present site of Los Angeles, to the Philadelphia mint.

Recent American and Foreign Patents.

Under this heading we shall publish weekly notes of some of the more prominent home and foreign patents.

WATER WHEEL.—O. W. Ludlow, Bellefontaine, Ohio.—This invention relates to a new and useful improvement in horizontal water wheels and has for its object the varying of the discharge of the water from the wheel by ranging the capacity of the issues, and also by regulating the action or suction of the draft wheel, whereby the capacity of the wheel may be regulated to suit the amount of power it is required to give out and the wheel made to work at a less power than its maximum, with the use of a proportionate amount of water only.

DEVICE FOR PREPARING SPRING PLATES.—James B. Cleveland, Hackensack, N. J.—This invention relates to a new and improved device for preparing plates for vehicle and other springs. The object of the invention is to avoid the labor now necessarily expended in rendering the plates smooth or giving them an even or true surface, work now performed by means of a grindstone. The invention consists in subjecting the plates, previous to the operation of rolling, to the action of dies whereby they are reduced to an uniform thickness throughout their entire length and consequently will admit of being rolled pertectly smooth and true.

DETACHING BOATS FROM THEIR DAVITS.—E. C. Hurlbut, Middle Haddam, Conn., E. H. Snow, Hartford, Conn.—This invention relates to a new mode of detaching boats from their davits whereby with a single movement boats may be speedily and safely dropped into the water.

MODE OF DRYING CLOTHES.—Harvey Brown, New York City.—This invention has for its object the facilitating of the drying of clothes, and to this end I provide a portable or adjustable closet, box, or compartment, constructed in such a manner that it may be readily put up for use and also taken down with facility; the clothes being suspended on suitable lines within the compartment or box alluded to and the air within, heated by any suitable means so as to evaporte the moisture from the clothes and rapidly dry the same.

CORN AND CANE HARVESTER.—Edward H. Clinton, Washington Prather and Henry O. Hutchinson, Iowa city, Iowa.—This invention relates to a new and improved machine for cutting standing corn and sugar cane and depositing it in gavels for shocking or for convenience of depositing it where carts or wagons for carrying it out of the field to any place where required.

OIL CAN.—J. H. Goodwin, Scotland Neck, N. C.—This invention relates to a new and improved oil can of that class which are more especially designed for oiling machinery and are generally constructed of rather small dimensions so that they may be conveniently handled and placed in drawers, on small shelves, or put on a work bench without monopolizing much room. The present invention consists in constructing the oil can in such a manner that it may be placed and kept in quite shallow draws, be conveniently carried in the pocket if necessary, be capable of being manufactured at a less cost than those in present use and still be stronger and more durable.

PLOW.—C. W. Grant, Iona Island, N. Y.—This invention has for its object the converting or transforming of any ordinary tillage plow into an implement capable of performing many important offices for which the ordinary plows are either entirely incompetent or very imperfectly adapted. Such for instance as working the soil to a great depth by bringing the unfertile portion from any desirable depth not exceeding two feet and communicating and mingling it thoroughly with the surface soil, or, if desired, by bringing the sub-soil wholly from the bottom and placing the surface soil below, entirely, reversing it and performing the work called "trenching" when done by a spade.

CARBURETING APPARATUS.—E. J. Fraser, Erie, Pa.—This invention relates to a new and useful method of charging atmospheric air with the vapor of volatile liquids or hydro-carbon oils, whereby the air is rendered inflamable and fitted for illuminating purposes.

OSCILLATING PISTON STEAM ENGINE.—W. M. Elrod, St. Louis, Mo.—This invention consists in the peculiar construction of the piston and the valve, and arrangement of the ports together with the device for reversing the motion of the engine.

WATCHES.—E. Jewell, Louisville, Ky.—This invention relates more particularly to the American watch so-called, and consists in incircling the plates, carrying the watch movement with a band or rim, so formed as to spring and fasten itself in place without additional means; the object being to prevent dirt or dust from entering the movement and thus injuring and interfering with its perfect running

SLATE CUTTER.—T. R. Drummond, Hartford, Conn.—This invention consists in forming and using a box knife or a series of knives attached to the lower edge of a box, of a form to correspond with the shape of the slate, and in using in connection therewith elastic blocks or cushions.

MANUFACTURE OF AUGERS AND AUGER BITS.—James Swan, Seymour, Conn.—This invention consists in forming the twist or pod of the single twist auger or auger bit in dies, by blows or by pressure, different dies being employed to suit the progressive stages of the process.

PRINTING PRESS.—C. Potter, Jr., Westerly, R. I.—This invention relates to a new and useful improvement in that class of printing presses known as the drum cylinder, and which is provided with a reciprocating form bed. The invention consists in an improved means for ensuring an easy and smooth movement of the form bed by avoiding jars or concussions at the termination of its strokes, said means also serving to hold the form bed down upon its ways when near the termination of its strokes, the form bed having a tendency to rise at these points, and which has hitherto been prevented by gibs attached to the form bed hooping or projecting under frame work of press, a rather expensive arrangement.

MEASURING LIQUIDS.—Purcel Brinkerhoff, Chillecothe, Mo—This invention is to furnish a simple and portable vessel by which liquids can be measured from a barrel or reservoir, without resorting to different sized measuring cups for that purpose.

STRAINER AND COOKING APPARATUS.—John Baumeister, Detroit, Mich.—This invention consists in arranging vessels with perforated bottoms over a boiler and in strainers without bottoms which are placed in the said vessels.

HYDRO EXTRATOR.—E. C. Cleveland, Worcester, Mass.—This invention consists in so supporting or hanging and arranging the basket of the hydro-extractor, that is to be revolved at a great speed as to move about from side to side freely for a limited distance, thereby changing the upright shaft from a vertical line.

ATTACHMENT TO PREVENT HOGS FROM ROOTING.—John Butts, Evansville, Wis.—This invention relates to an attachment to the snout of hogs, for the purpose of preventing them from rooting.

PIPE WRENCH.—W. C. Abbe, Petroleum Center, Pa.—This invention relates to an improved construction of a wrench for coupling and uncoupling gas and other pipe or tubing, bolts or round screws of any kind.

DOORS FOR STOVES AND FURNACES.—Frank S. Bissell, Pittsburgh, Pa.—This invention consists in so arranging a stove or furnace door that it is closed by springs, which springs operate upon it whenever it is not held open by force.

WAX THREAD SEWING MACHINES.—George Elmes, West Farmham, Canada East.—This invention relates to an improvement on Townshend's Wax Thread Sewing Machines to regulate the pressure of the feed movement.

VOLUTE SPRINGS.—John Freeland and Daniel Ward, New York City.—This invention relates to an improvement in the construction of volute springs for railroad car springs and other purposes.

MEAT MASHER.—James Lefeber, Cambridge City, Ind.—This invention relates to a new and useful improvement in the construction of a machine for mashing or breaking the fiber of beefsteaks or other meat in order to make the meat tender.

SEWING MACHINE.—C. Stebbins, Pike Co., N. Y.—This invention relates to improvements in sewing machines, and consists in part of the new improved mechanical devices whereby the movement of the needle is regulated according to the varying thickness of the material which is being sewed, in such a manner that slack thread shall be given when the eye of the needle reaches the surface of the material, in order to enable the needle to descend through the work, whatever may be the inequality in the thickness thereof.

ANTI-DYSPEPSIA BITTERS.—Christopher T. Provost, New York city.—This invention relates to a new composition for curing dyspepsia and indigestion, and consists in the combination with hard cider of certain ingredients by which the anti-dyspeptic qualities of the old cider will be increased and its flavor and taste improved. This composition will be an excellent tonic, and not a stimulant, as most of the so-called stomach bitters generally are.

RAILROAD FROG.—Adolph Philippi, Elizabethport, N. J.—This invention relates to a new railroad frog which is so arranged that the wheels will be by it guided smoothly and without shocks upon the regular track, and which is made elastic by a bed of very thin wood laid between it and the sleeper.

CHURNING MACHINE.—Gurnsey & Crandell, Rhinebeck. N. Y.—This invention has for its object to furnish a churning machine simple in construction, easily operated, and which may be manufactured at a comparatively small expense.

FENCE.—L. H. Bowlus, Knoxville, Tenn.—This invention has for its object to furnish an improved fence, adapted for use in places liable to be overflowed by high water, which shall be so constructed that the panels may be thrown down so that the drift may pass over the fence without injuring it and which can be set up again in a very short time,

SEEDER AND CULTIVATOR.—F. B. Johnson, De Witt, Iowa.—This invention has for its object to furnish an improved broadcast seeder which, shall be so constructed and arranged that it may be easily adjusted for use as a cultivator.

EXPANDING DIE.—B. T. Loomis, New York city.—This invention has for its object to furnish an improved expanding die, so constructed that it may be adjusted to cut a screw thread upon bolts or pipes of different sizes.

SAWING MACHINE.—Esau Tarrant, Muskegon, Mich.—This invention has for its object to so improve the construction of sawing machines that the lumber may be sawn straight and of any required thickness without its being necessary to adjust rolls, as is the case with the machines in common use.

WASHING MACHINE.—D. H. Kranser and G. N, Bowman, Pottsville, Pa.—This invention has for its object to furnish an improved washing machine, simple in construction, not liable to get out of order, easy to be operated, and which will do its work thoroughly and quickly.

CHURN.—C. L, Eggert, Lawrence, Kansas.—This invention has for its object to furnish an improved churn, simple in construction, easily operated, which shall bring the butter in a very short time, and by means of which the butter may be gathered.

WHEELS FOR WAGONS AND OTHER VEHICLES.—S. B. Welton, Waterbury, Conn.—This invention has for its object to so improve the construction of the axle box and hub that the box may be easily removed and replaced, and that it may be readily adjusted to compensate for its wear.

WASHING MACHINE.—Geo. W. Havermale, La Harpe, Ill.—This invention has for its object to furnish an improved washing machine, simple in construction easy to be operated, which will do its work quickly, thoroughly, and without injury to the most delicate fabric, and which will operate with equal efficiency upon a small or large quantity of clothes.

COMPLETE ANTI-FOULER, TO PREVENT ROPES FROM FOULING SHIPS' PROPELLERS.—Richard Harvey Hudson, Glasgow, Scotland.—This invention relates to a device for preventing ropes from fouling ships' propellers, and consists of two disks, each made in two sections, of steel, or of iron or other metal sheathed with steel, and fixed securely, one disk to the stern post before, and the other to the rudder post abaft the screw.

TRACE FASTENER.—G. W. Fink, Pleasant Plains, Ill.—This invention relates to an improved method of securing trace tugs, and consists of an arrangement of the tug trace and singletree attachment whereby a prolongation of the trace or the trace tongue presses against the neck or eccentric groove of the button of the attachment, and holds the loop in which the trace tongue is arranged firmly against the neck of the button attached to the ferule.

BEDSTEAD.—B. F. Woodside, Atlanta, Ga.—This invention has for its object to furnish an improved bedstead so constructed and arranged as to be easily and quickly folded into a compact form for storage, transportation, or for speedy removal from the house in case of fire.

COTTON PRESS.—James G. Cummings, Columbus, Miss.—This invention relates to improvements in the construction of a press for packing cotton and other substances in bales by horse power, or any convenient motor, especially adapted to use on cotton plantations.

© 1867 SCIENTIFIC AMERICAN, INC.

PHOTOGRAPHIC APPARATUS.—David H. Houston, Cambria, Wis.—This invention relates to improvements in the apparatus used in photographic manipulation, and has for its objects: First, the carrying a large number of sensitive plates, prepared either by the dry or wet process, in a single frame, at the same time increasing the portability of the equipment of the photographer; second, the more complete exclusion of light from the sensitive plate up to the very moment it is to be exposed, and after exposure; third, the substitution of a single frame, which I call a carrying frame, for numerous copying frames, which are entirely dispensed with; fourth, the automatic adjustment of the sensitive plate in the camera and returning the same to the carrying frame after exposure; fifth, simplifying the manipulations of the photographic process.

TREATMENT OF THE PRECIPITATES OF LEAD.—Geo. T. Lewis, Philadelphia, Pa.—This invention consists in the mechanical treatment, by friction and pressure, of the precipitated carburate of lead, obtained by bringing carbonic acid in contact with a solution of basic acetate of lead, by the ordinary process, known as the French process, for making white lead by solution.

UNDERGROUND RAILROAD.—Josiah Dixon, New York city.—This invention consists in an improved mode of constructing railroads, in cities, underground or below the level of the streets.

LEACHING TAN BARK.—Abraham Steers, New York city.—This invention relates to a new process for leaching tan bark, in which the ground bark is first washed out cold, with water or weak tanning liquor, then heated with steam, and finally washed out with water let on from below. The tan bark to be extracted is enclosed in a leach, by preference round and detached, and provided with a perforated false bottom and a perforated false top, between which the tan bark is enclosed. The menstruum is admitted from above, through the false top, and passed from one leach to the other, and after all the strength has been extracted which can be got out by a cold menstruum, the bark is steamed from below and the menstruum is let off from below, so that the formation of channels in the bark is prevented, and the menstruum is not permitted to run the bark without working out its strength.

APPARATUS FOR SOLDERING TROUGHS.—Charles and Geo. Fisher, Tecumseh, Mich.—This invention consists in constructing an apparatus in such a manner that in manufacturing tin, zinc, or sheet-metal troughs or gutters, they may be held firmly in their place, when the different sections are being soldered together.

NIGHT CART.—John H. Lynch, Baltimore, Md.—This night cart is so adjusted upon the axle as to be capable of being tipped backward to discharge its contents at a rear opening when the shutter is opened. The door of the charging opening above, as well as the shutter in the rear, have packing rings which fit their openings tightly, and they are held closed by lever and chain or rack and pinion.

MACHINE FOR CUTTING AND GRINDING CORN FODDER.—Alexander Goodhart, Newville P. O., Pa. In this invention an apparatus for cutting the fodder is combined with another for grinding it in such a manner that after the fodder has passed through the cutter it falls among the teeth of the grinding apparatus and is thoroughly ground.

LINING FOR COAL-OIL BARRELS.—Wm. R. Bree, Pottsville, Pa.—In this invention a coating of a composition, the ingredients of which are glue, molasses, and lime water, is applied to the inside of the barrels to render them impervious to the oil.

MACHINE FOR TURNING AXLES.—Geo. S. Knight, Syracuse, N. Y.—This invention relates to a machine in which axles and shafting, of whatever description and form, can be turned in a very accurate and rapid manner, and by means of which any rings or grooves, around such axles or shafts, can be very neatly and accurately executed.

WINDMILL POWER REGULATOR.—Joseph Schenker, Brownsville, Mich.—The object of this invention is to provide a machine whereby standing or stagnant water, either in lakes, or tanks, or cisterns, may be utilized to drive heavy machinery, in such a manner that by the windmill the water is pumped into an elevated tank or reservoir, whence it falls down, and by the fall, enough power is developed, in proportion to the hight and diameter of the column of water, to drive a large machine.

PUMP.—C. Verniaud and E. D.T. Lucie, Quincy, Ill.—This invention consists in the arrangement and construction of the valves in a horizontal pump, and also in the construction of the piston, which is made so as to be watertight at all times, without the use of complicated devices for the purpose.

CORN CULTIVATOR.—P. F. Brittain, Genesee, Ill.—The object of this invention is to construct a corn plow, which is so arranged that the plows can be set more or less apart, and be raised and lowered at will, and be easily handled throughout and be cheaply made. A device for marking the rows is attached to the frame of this plow, and the latter can be adapted for throwing the ground upon, or cultivating the corn, and for throwing the ground from the corn, as may be desired.

LOCK.—E. G. F. Arndt and C. E. L. Moebius, N. Y. city.—This invention consists in so arranging a spring bolt lock that it may be used as a common bolt lock, or as a night lock, and which can be so locked from the inside, by a guard plate, that the bolt cannot be moved by a key.

DIE FOR CUTTING THREADS ON TUBING.—William T. Cole, New York city.—This invention relates to a device whereby screw threads are cut on tubes and other cylindrical, solid, or hollow articles, and consists in making the die, by which the screw thread is cut, of two or more pieces, which are pivoted to a vertical suspended plate, and which are champed together, so as to form a circular die, while the thread is being cut, but which are thrown apart by means of springs or weights, as soon as the thread has been cut, thereby allowing the easy removal of the tube.

CARRIAGE PROP.—William Finn, Poughkeepsie, N. Y.—This invention relates to a new manner of attaching the standard of a carriage prop to the side of the bow, and also to a device for preventing the nut by which the joint bars are held on the standard, from being turned and lost by the motion of the said joint bars and by the rattling of the wagon.

PETROLEUM STILL.—E. G. Kelley, New York city.—This invention relates to a still for evaporating petroleum or other hydro-carbon liquids, that is provided with two or more exits for the vapor, each of them being connected with a separate condenser or cooler for the purpose of separating while the still is in continual motion.

WRENCH.—Geo. C. Taft, Worcester, Mass. Patented Aug. 13, 1867.—This invention relates to an improvement in wrenches, and consists in attaching the head of the rosser to the stationary jaw of a wrench by means of a swivel, in such manner that the screw may turn freely in the sliding jaw and move it back and forth.

WAGON.—Edward Robbinson, Greenbush, Wis. Patented Aug. 13, 1867.—This invention relates to a device to be attached to ordinary farm wagons for the purpose of preventing the tongue from striking the horses or rocking the collars when driving over rough roads.

MACHINE FOR BENDING TIRES.—Francis Mills, Mt. Vernon, Ind. Patented Aug. 13, 1867.—This invention relates to a new and improved machine for bending iron for wheel tires, and consists in an arrangement of feed and shaping rollers, operated by a hand crank, in such manner that a bar of iron shall be bent in any desired curve by passing through the rollers.

RAT TRAP.—Isaac Connell, Spencer's Station, Ohio.—This invention has for its object to furnish an improved rat trap, simple in construction and effective in operation.

SADIRON.—C. C. Hare, Louisville, Ky.—This invention relates to an improvement in sadirons, and consists in a sadiron having a detachable handle.

HARROW.—Lemuel Beckelshymer, Leavenworth, Kansas.—This invention relates to harrows mounted upon wheels and receiving a reciprocating transverse movement from the said wheels by the interposition of gearing.

TIRE FOR WHEELS FOR VEHICLES.—Henry A. Potter, Providence, R.I.—This invention has for its object to furnish an improvement in the construction of wagon tires and in the manner of attaching it to the wheels.

BASE BALL TABLE.—William Buckley, New York City.—This invention consists of an improved base ball table by means of which a new game for parlor or other in-door amusement is furnished, and which is played according to the rules and regulations of the game of base ball.

REVOLVING CYLINDER STEAM ENGINE.—Charles Scott and William H. Morton, Hamilton, Ohio.—This invention relates to a new and improved application of the steam engine for the purpose of producing rotary motion, and the invention consists in suspending the cylinder on trunnions, and revolving it with the fly wheel.

PROPELLING STEAM CARRIAGES AND OTHER MACHINERY.—Elijah Ware, Bayonne, N. J.—This invention relates to a new and improved method of altering the speed and thereby increasing the power used in the propulsion of steam carriages, and for other purposes; and it consists in a combination of wheels which operate so that the gear wheels may be made to exert increased power when desired, as will be described more fully hereafter.

COOK STOVE.—James Grimes, Portsmouth, Ohio.—This invention relates to an improvement in the construction of cast iron cook stoves, to provide for excessive expansion and sudden contraction of the top plate, and thereby prevent the general injury resulting therefrom to the whole stove, by the derangement of all the other plates, which depend upon their relation to and connection with the top plate, for keeping their proper places in all cook stoves.

WATER PAILS, ETC., OF CHEMICALLY PREPARED PAPER.—John William Jarboe, Greenpoint, L. I.—The present invention relates to the manufacture of water pails and other articles of household furniture, such as refrigerators, ice coolers, wash basins, spittoons, chamber pails, and pots, etc., made of chemically prepared paper, which are coated with varnish after the article is formed and dried.

MANUFACTURING FRUIT CANS.—John C. Underwood, and Peter Johnson, Richmond, Ind.—This invention relates to a new and improved method of manufacturing fruit cans, and it consists in constructing an apparatus by which the body of a can is expanded to the proper size or diameter, so that all the joints are easily soldered, and also in an arrangement by which the rosin for soldering is properly distributed.

CHAIR.—F. J. Coates, Cincinnati, Ohio.—This invention has its seat and back so hung to the frame forming the legs, that the back can be brought to a greater or lesser angle of inclination, and there secured or held, according as may be desired.

MOIST AIR VENTILATOR.—Thomas S. Bowman, St. Louis, Mo.—This invention consists in surrounding the stove pipe with an air drum, the bottom of which is connected with a base which contains water, which water is evaporated and discharged into the room with fresh air.

FISH FLAKE.—Joseph Foster, Beverly, Mass.—The object of this invention is to provide a fish flake or frame for curing cod and other fish, by drying, which is so arranged as to be adjustable in its position for exposing the fish more or less to the sun, as required, and protecting them from his rays in the heat of the day by means of a screen.

DUST BRUSH.—J. B. Wood, Lansingburgh, N. Y.—This invention consists in inserting the bristles properly trenched, knotted and wound at one end, and by such end dipped in liquid shellac or varnish, and in one end of a metallic ferule having a cross plate or partition about half way of its length, in combination with a metal handle driven into the open end of such ferule, and there secured by soldering, melting, or in any other suitable manner.

FLAT IRON HEATER.—John H. Yates, Batavia, N. Y.—This invention relates to an improvement in the construction of flat iron heaters, and consists in a conical deflector, which is so arranged as to direct the heat in its passage up through the heater, against the bottom of inclined planes on which the flat irons are placed to be heated.

AXLE BOX.—Hugh Brady, Factoryville, N. Y.—The nature of this invention consists in inclosing in the axle box a number of sets of friction rollers, hung loosely upon circular bearings, each set of rollers being separated by partitions, which are formed of rings made fast by screws through the axle.

ROCKING CHAIR.—Daniel Witt, Worcester, Mass.—This invention relates to a new and useful improvement in the construction of rocking chairs, and consists in mounting the seat upon a stationary frame, or set of legs, instead of rockers, and suspending it on central pivots, to have an oscillating motion, which is regulated by spiral springs under the front and rear of the seat.

IMPROVEMENT IN HORSE HAY RAKES.—Josiah D. Heebner, Norristonville Pa.—In this invention the rake is lifted over the windrow by a tripping pole, which can be instantly caused by the driver to catch against the ground, raise, and, when the machine has advanced three or four feet, drop the rake again, without other assistance from the driver than that of the first throwing the tripping pole into gear.

IMPROVED PORTABLE SPORTING AND LIFE BOAT.—John M. Cayce, Franklin, Tenn.—This boat is a light frame covered with watertight cloth, and capable of folding together. It is provided with horizontal arms having floats at their extremities, which can be thrown out so as to make the width of the whole floating apparatus equal to its length, and render capsizing nearly impossible.

COFFEE POT.—James C. Walker, Waco Village, Texas.—In this invention steam is introduced from a boiler through a tube into the centre of a vessel containing the coffee. The latter vessel is within the coffee pot, and the essence of the coffee in it is extracted by the joint action of the steam and water within the coffee pot.

PORTABLE FORGE.—John M. Cayce, Franklin, Tenn.—In this invention the blast is obtained from fans situated beneath the forge and worked by a treadle.

HARVESTER WHEEL.—Isaac S. and Henry R. Russell, New Market, Md.—In this invention the wheel is connected with the axle by a device which enables it to change direction in turning, so as always to move in the direction of the curve.

ORE ROASTING FURNACE.—George B. Field, New York City.—This invention relates to revolving ore roasting and desulphurizing furnaces, provided with an attachment for agitating the ores while roasting. The invention consists in making the various parts of such attachment hollow or tubular, for the admission of steam or water to keep them from being destroyed by the intense heat to which they are subjected.

ORE ROASTING FURNACE.—George B. Field, New York City.—This invention consists in the use of a peculiar shaped ledge or shelf in the furnace, made hollow for the introduction of steam or water, and the construction of an aperture or part through which the cavity or shelf may be cleaned from the outside of the revolving cylinder.

MINERS' PICK.—Henry M. Hamilton, New York City.—This pick has an eye in which the sides are partly parallel and partly flaring. The parallel opposite portions of the eye adhere to the helve and give it stability to resist arring loose, while the flaring portion becomes jammed in the eye and sets the pick firmly without wedges.

BLASTING CARTRIDGE AND FUSE.—A. Rollason. Patented in England Dec. 15, 1866.—In carrying out this invention a case or shell is made of paper or other suitable material, similar to a rocket case. This case is to be closed at the bottom, and is to be placed in a mold, after which, if the cartridge be intended for blasting purposes, the end of a fuse, such as is commonly used in mining operations, is placed inside the case, either on one side of it or down the center. The end of the fuse is made to rest on the bottom of the case, which is then to be filled with gun cotton or other analogous compound consisting of pyroxiline rammed down very tight with a rammer or by hydraulic pressure. In this latter case the patentee does not use a sheet or case, as before named, but simply incloses the cartridge in any suitable wrapper, either water proof or not, as may be desired, the fuse during the filling of the cartridge being protected from injury by being received in a groove prepared for it in the rammer. When making cartridges for artillery purposes, or for sporting or other guns or rifles, the gun cotton or pyroxiline compound may be modified or reduced in strength or explosive power by mixing with it unprepared cotton, wool, paper pulp, or other inexplosive fiber or pulverized material.

Answers to Correspondents.

CORRESPONDENTS who expect to receive answers to their letters must, in all cases, sign their names. We have a right to know those who seek information from us; besides, as sometimes happens, we may prefer to address the correspondent by mail.

SPECIAL NOTE.—This column is designed for the general interest and instruction of our readers, not for gratuitous replies to questions of a purely business or personal nature. We will publish such inquiries, however, when paid for as advertisemets at 50 cents a line, under the head of "Business and Personal."

☞ *All reference to back numbers should be by volume and page.*

S. R., of Ky.—The metals sodium, magnesium, and aluminum have as yet been manufactured only in small quantities, and have no steady market prices. By the oz., one dollar and upwards would be charged in this city for either of them. Sodium is the only one of these which has come into regular use. When made into an amalgum it is found very useful in gold mining, and various metallurgical processes.

W. J., of Ala.—The processes of butter making mainly depends upon physical action The butter is fully formed in the cream, and the effect of the churning is simply to bring the isolated particles in one mass. A high temperature favors the process of softening the globules of butter and rendering them more adhesive.

N. D., of Mich.—"Are there any sweet substances besides sugar, honey, manna, glycerin, sugar of lead, and liquoric, and are not all sweet substances of the chemical nature of sugar?" There are dozens of sweet substances which you have not named. One of the most extraordinary of all sweets is hyposulphite of silver, which is so intensely sweet that a single grain will render a gallon of water perceptably sweet. There is no property common to these substances but their sweet taste, and it is by this only that they can be classed together.

J. M. F., of Ohio.—Hydrochloric acid is generally most convenient for precipiating silver from solutions, and will be quite effectual for your purpose.

R. H. L., of Texas.—The fact that dust does not rise when the air is quiet, is sufficient evidence that it is heavier than air. If you were able to see the currents of air, the cause of the dust rising would be manifest to you. Behold how the winds raise the waves, "mountain high," and yet the water is 800 times heavier than air.

H. M. B., of Ohio.—The plates of galvanic batteries need to have considerable thickness in order to conduct the current, and therefore you will not be successful in the use of gold leaf laid on glass for the negative plate.

A. C. W., of Vt.—A liquid quartz paint will be suitable for painting your slate ornaments. The solid body of the paint may be mineral matter which you can find in your neighborhood, the proper shade of color seems to be the most important quality.

H M. S., of Mich.—Your battery is in good order as you describe it except that the zinc plate needs amalgamating. Get two or three ounces of quicksilver, and smear it well over the zinc, and the battery will work as well as it ever did.

S. P. D., of Va., says:—"Suppose you suggest through your paper the propriety of mauufacturing ready made teeth to be kept in the stores the same as ready made clothing, shoes, etc. The present price is out of all question. Teeth should be within the reach of all." We would state that if the teeth wanted are saw teeth, they can be furnished in any quantity in this city; so, also, if teeth for the human jaw, but in both cases it requires an experienced hand to insert them. We have artificial legs, arms, and eyes kept on hand, and expect to see the day when artificial heads of wood as well as leather may be found on the shelves of our stores as well as on human shoulders.

J. P. H., of Mass.—Delicate flat springs of steel or brass can be tempered by judicious hammering without the use of fire or water. For some purposes this is much better than the ordinary method. For your mortising machine a spring of tough, elastic wood is better and cheaper than one of steel. Wooden wagon springs have been used, and, we believe have proved excellent.

Business and Personal.

The charge for insertion under this head is 50 cents a line.

Pattern Letters and Figures to put on patterns for castings, etc., etc., are made by Knight Brothers, Seneca Falls, N. Y.

G. M. Danforth & Co., Inventors' Exchange, see advertisment.

New invention. A potato digger which puts the potatoes in a bag and the small ones apart in a box. The original was made by a blacksmith at very little cost, which will be saved by the work on three acres of potatoes. Patent rights sell: C. G. Grabo. Address care of Schober Bro., Detroit, Mich.

For sale a valuable patent for the State of Pennsylvania. Its equal is seldom offered. A good chance for a live man, for particulars, address Postoffice Box 230, Mexico, N. Y.

Manufacturers of paper collars or similar goods desirous of manufacturing a new paper vest under patent will please address, W. D. Overell, Box 773, New York City.

C. Koch, Godfrey, Ill., desires to communicate with makers of Drop Presses, for stamping out tin ware.

H. A. Anderson & Co., Brownsville, Minn., wish to purchase a first rate stump puller.

Manufacturers of water proof paper or felt please send address with sample and price to A. P. Curry, Chagrin Falls, Ohio.

Novelty works of Adrian, Mich., want circulars of factories of small tools, such as Lathes, Planers, Milling rack, Drill Presses, etc., also of tools for clock making. Makers of trap and other springs, of horn and hard rubber, also steel and silver plated screws, please send circular as above.

Inventions Patented in England by Americans.

[Condensed from the "Journal of the Commissioners of Patents."]

PROVISIONAL PROTECTION FOR SIX MONTHS.

1,630.—COVERING BUCKLES AND OTHER METALLIC TRIMMINGS FOR CARRIAGES AND HARNESS WITH A COATING OF VULCANIZED OR HARD RUBBER, GUTTA PERCHA OR OTHER GUM.—Andrew Albrigtt, Dryden, N.Y. June 1, 1867.

1,930.—MEANS OF AND APPARATUS FOR WASHING AND DRYING MOIST SUBSTANCES, OR DRYING AND BURNING GRANULAR SUBSTANCES, OR EVAPORATING LIQUID SUBSTANCES, AND FOR ECONOMIZING THE WASTE HEAT PRODUCED IN SUCH PROCESSES.—George Gordon, San Francisco, Cal. July 2, 1867.

2,024.—METALLIC EYE FOR LACES.—Louis C. Hoffmeister, Philadelphia, Pa, July 10, 1867.

2,029.—WOOD-PLANING MACHINE.—Baxter D. Whitney, Winchendon, Mass. July 10, 1867.

2,030.—CIRCULAR SAW MACHINE.—Baxter D. Whitney, Winchendon, Mass. July 10, 1867.

2,034.—MANUFACTURE OF REFINED SUGAR.—Edward P. Eastwick, Baltimore, Md. July 11, 1867.

2,038.—CONSTRUCTION OF THE PERMANENT WAY OF RAILWAYS.—Gustavus Natorp, New York City. July 11, 1867.

2,051.—APPARATUS FOR CUTTING OR MINCING MEAT, ETC.—David Lyman, Middlefield, Conn. July 12, 1867.

2,052.—LIFE BOAT AND DETACHING TACKLE FOR BOATS.—Milton V. Nobles, David Decker, and Wm. J. Dounce, Elmira, N. Y. July 12, 1867.

2,056.—MANUFACTURE OF CORSETS.—Joseph Beal, Granville Webster, Edward Sawyer, and John Hunt, Boston, Mass. July 12, 1867.

2,058.—POWER LOOM.—Erastus B. Bigelow, Boston, Mass. July 12, 1867.

2,117.—SELF-LUBRICATING BOLSTER FOR SPINNING MACHINES.—Erastus N. Steere, Providence, R. I. July 19, 1867.

2,134.—APPARATUS FOR CLEANING BOILER AND OTHER TUBES.—John B. Christoffel, Samuel Booth, and Samuel Booth, Jun., New York City. July 22, 1867.

1,948.—MACHINERY FOR PRINTING FROM A CHAIN OF TYPES.—John McAdams, Brooklyn, N. Y. July 3, 1867.

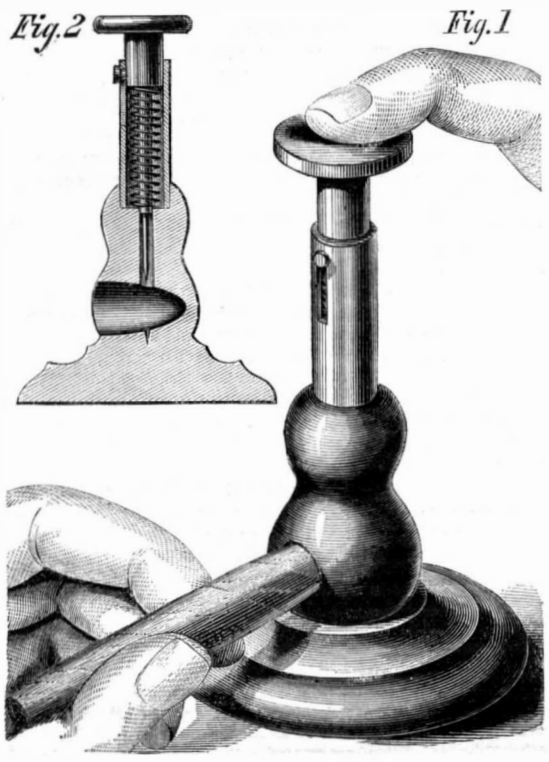
2,103.—LOOM.—George Crompton, Worcester, Mass. July 17, 1867.

© 1867 SCIENTIFIC AMERICAN, INC.

OVERELL'S DEVICE FOR PIERCING CIGARS.

Smokers well understand the annoyance of the unwinding of the cigar wrapper at the end received into the mouth. This frequently follows the common habit of biting off the end of the cigar, which loosens the wrapper and wastes the filling. The piercing by a pocket knife is inconvenient, and if the cigar is "ripe" and dry it often breaks the wrapper and proves as unpleasant as biting or cutting off the end.

A neat little implement, lately invented, is shown in the engravings. Fig. 1 is a perspective view showing the manner of using, and Fig. 2 exhibits the internal arrangement, being a vertical section. The stand may be of metal or wood and ornamented in any manner desired. A large base gives security in standing it upon a counter or table, and the form may be of any style which combines use and elegance. From the



top of the stand rises a sheath in which a piston moves, carrying at its lower end a needle of proper form for puncturing the cigar, and having at its upper end a button to receive the pressure of the finger or thumb.

After depressing the plunger and needle a spiral spring restores them to their original position. A recess in the side of the stand, where the needle impinges upon the cigar is of a form to hold the cigar end in shape while being punctured, and prevents all unrolling, cracking, or breaking of the wrapper, while the needle makes a hole sufficiently large to insure a good draft. Of course by partly rotating the cigar, after one puncture has been made, other holes may be pierced if desired.

This device is intended, principally, for the use of tobacco stores, hotels, etc., although it may be carried in the pocket by a slight modification of its form.

For rights to manufacture address W. D. Overell, 46 King street, New York City.

An Improvement in Car Windows Wanted.

Among the many ills the travelling public are subjected to, one of the most irritating is in opening car windows. When the half suffocated denizen of the city leaves the seething, crowded marts of commerce for his summer residence in the rural districts, he naturally desires to inhale as much fresh air as circumstances permit; in fact, he desires to respire a purer atmosphere than the one he left. Such being the bent of his inclinations, the first impulse on entering a close, crowded car is to open the window. The window, however, with that irritating species of inanimate obstinacy offers a passive resistance, and defies the efforts of even the obliging conductor, who is generally called upon to perform what physically stronger men than he failed in doing. By this time the unlucky traveler in search of fresh air becomes thoroughly irate, as the constrained position he has to maintain, and the want of a leverage or purchase for the arms when endeavoring to open the window, is not only painful from the strain but actually has an injurious effect upon the nerves, especially when one gets his labor for his pains. Some method ought to be introduced by which these provoking windows can be raised and lowered with facility, and without the tremendous exertion now requisite. In addition to this it is exceedingly disagreeable for a lady travelling alone to be obliged to ask one of the gentlemen among her fellow passengers to open or close a window. A request of this kind is often misconstrued into an invitation to conversation, and results in a subjection to impertinences, until the gallant is reminded by sharp rebuke that his intrusive conversation can be dispensed with. —*N. Y. World.*

How to Keep Cool.

Be sparing in your diet, which should consist principally of fruits, berries, and vegetables. Avoid every thing of a greasy nature; also spices, condiments, and sweets. Drink nothing but water. Chew nothing but food; chew that well, but do not chew too much of it. Excess in eating is one of the principal causes of that lazy, listless, relaxing feeling experienced by so many persons in hot weather. Dress lightly, and change often. Wear nothing at night which is worn during the day. Bathe the body every morning with cool or cold water. Keep a clean conscience as well as clean body and clean clothing, and don't get excited. If uncomfortably warm at any time, immerse the hands, or feet, or both, in cold water for a short time, or let a stream of cold water run upon the wrists and ankles. This will cool the whole body in a short time.

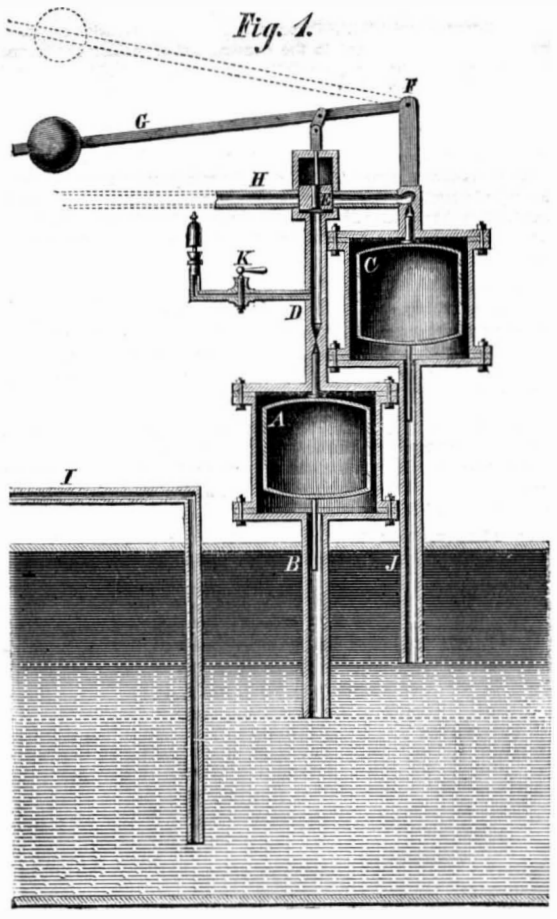
NEYNABER'S AUTOMATIC BOILER FEEDER.

The nature of this invention consists in the construction and application of valves, by means of which the steam of a boiler is brought to act on a piston or alarm whistle when the water falls to a given point, said action of steam being maintained until the water in the boiler rises to a certain point, and is then cut off, and thus a motive power is gained from the moment when the boiler wants feeding until it is sufficiently fed, and no longer, which so gained motive power can be used to perform the work of feeding the boiler automatically.

Fig. 1 represents the boiler feeder. A, is a valve, consisting of a float to which, at the upper part, the valve stem is pivoted. This valve stem is of peculiar construction and one of the most important parts of the apparatus. It terminates in a parallel plug of one eight of an inch diameter and one half an inch long. This plug slides into a hole and thereby closes or opens it, and is so constructed that the pressure of the steam on the plug is reduced, and friction avoided, so that by means of the weight of the float the valve will always open when the water descends through pipe, B. The plug acts also as a punch in case that any dirt should fill up the hole.

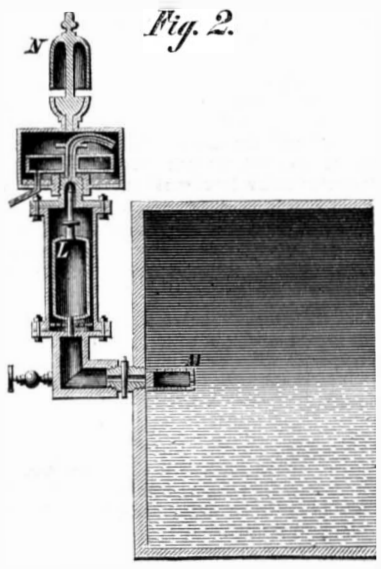
C, is a second valve of the same construction, with the exception of having a larger valve stem and seat. D, represents a pipe for the purpose of having attached, a steam whistle, or also, a steam trap for the separation of the steam from any water. E, represents a piston, which is moved by the steam escaping through the valves, A and C. F is the support of the lever, G, with weight attached. H is a steam pipe, leading steam to a pump. I represents a feed pipe for feeding the boiler. The ends of pipes, B and J, are provided with sieves to prevent foreign substances from entering the pipes.

The operation is as follows: the boiler being filled with water to the upper dotted line, water extends into pipes, B and J, lifts the floats, A and C, and these shut up the apertures at their tops. As the water evaporates below the upper line steam will enter pipe, J, and the water therein will descend; but as the opening of pipe, H, is closed by the piston, E, (which is acting there as a slide valve also), no steam can escape through pipe, H, until the water falls by evaporation below



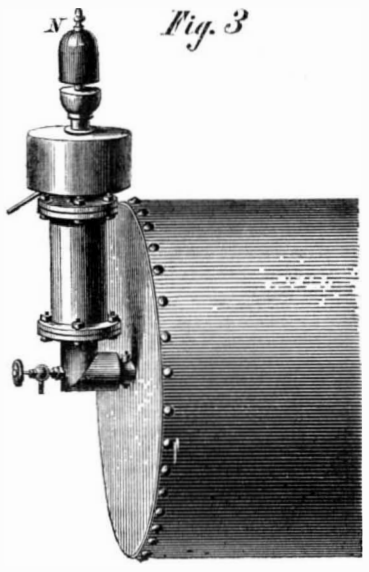
the lower dotted line in the boiler, then steam will flow through pipe, B, the water descend, the float, A, fall, steam find a way through pipe, D, lift the piston, E, which opens by this movement the apertures of pipe, H, and the steam escaping through this pipe can be used to put a separate feeding pump in motion. The movement of the lever, G, caused by the motion of piston, E, can also be used to start or stop a pump by moving the belt on or off the tight or loose pulley, or to open or shut, by means of a lever, the stop cock of a hydrant supplying a feeding pump attached to the engine. The lever can also be connected with the lever of the stop-cock, K, in such a manner that the alarm whistle will be blown when the boiler needs feeding; but as the lever, E, ascends toward its position indicated in dotted lines, the stop-cock will be shut until the feeding operation is performed and the lever descends again by means of its weight. The feeding pump will supply the boiler by means of pipe, I. As soon as the water rises in the boiler to the lower line, water will enter again pipe, B, will lift the float, A, which will close the aperture at its top; but the piston, E, being raised once, will be kept in its position, corresponding with that of the lever as shown in dotted lines, until the water rises to the upper line, when water will enter also pipe, J, and lift the float, C, which then will also close the aperture at its top, and cut off the steam. The pump work will now stop (or the water will be cut off), the steam in pipe, H, condenses, and the piston, E, will by means of the weight be brought down and the whole apparatus will again resume the position first described. This Automatic Boiler Feeder will recommend itself; it is simple in its construction so as to make it durable and reliable.

Figs. 2 and 3 represent the alarm device adapted for steam boilers, to give alarm when the water in the boiler evaporates to a given point, making a most convenient and reliable low water detector.



This alarm device consists of the single valve, L, whereby the orifice of pipe, M, is kept closed as long as the water stands above the dotted line, but is opened as soon as the water falls below the line, to allow the steam to flow through pipe, M, for the purpose of blowing an alarm whistle, N. The apparatus is represented in Fig. 2 in the state of allowing the steam to flow through it, for the purpose of blowing a whistle.

A small quantity of water will rise with the steam and to prevent an ejection of water, out of the alarm whistle, the pipe of the whistle may have an interposition of a steam box by which the water can be separated from the steam and afterwards be drawn off by means of a cock, or by the application of a steam trap, as illustrated in Fig. 2.



The advantages of this contrivance are plainly seen. It does not require any adjustment after it has given alarm, but is always ready again. This device can be put on outside of the boiler, and its proper place will be at the point of the middle gage cock. It can be put on in place of the middle of the three gage cocks, and the middle gage cock again put on the bracket of the alarm device. The bracket can be provided with a stop-cock. This device has been in successful operation at different places in Philadelphia. Patented June 4, 1867.

For other particulars in regard to the Automatic Boiler Feeder and Alarm Device, address the inventor and patentee. Several state rights, including California are for sale by A. F. W. Neynaber, 425 Girard Avenue, Philadelphia, Pa.

ASSOCIATION OF ENGINEERS AND ARCHITECTS.

A semi-annular meeting of this association has just been held in Worcester, Mass., lasting two days. We have no official report of the proceedings, but from a correspondent we learn that Mr. G. P. Low of the Boston and Maine Railroad read a valuable paper on the "Social Relations of Engineers," and among others were papers on the "Currents of the Minnesota and other Rivers," "Copper," "Architecture," "New Methods and Instruments for Drafting," "Improved Crosshead for Locomotives," "Timber Foundations for Masonry," "New Design for a Traveling Crane," and "Street Roadway Pavements."

When the full report of the meeting reaches us, we have no doubt of finding something in it of value to our readers.

SLIPPED INTO THE SEA.—Forty acres of bog land in the county of Mayo, the north-west extremity of Ireland, undermined by heavy rains after long continued drought, lately disappeared in the depths of the Atlantic. Ten acres of standing crops and several houses were destroyed.

© 1867 SCIENTIFIC AMERICAN, INC.

Scientific American.

MUNN & COMPANY, Editors and Proprietors.

PUBLISHED WEEKLY AT
NO. 37 PARK ROW (PARK BUILDING), NEW YORK.

O. D. MUNN. S. H. WALES. A. E. BEACH.

☞ "The American News Company," Agents, 121 Nassau street, New York

☞ Messrs. Sampson Low, Son & Co., Booksellers, 47 Ludgate Hill, London, England, are the Agents to receive European subscriptions or advertisements for the SCIENTIFIC AMERICAN. Orders sent to them will be promptly attended to.

☞ Messrs. Trubner & Co., 60 Paternoster Row London, are also Agents for the SCIENTIFIC AMERICAN.

VOL. XVII., No. 10....[NEW SERIES.]....*Twenty-first Year.*

NEW YORK, SATURDAY, SEPTEMBER 7, 1867.

Contents:

(Illustrated articles are marked with an asterisk.)

*Improvement in Brick Making Machines 145
The Poison of the Cobra-di-Capella 145
The Opal 145
Editorial Correspondence 146
The 15-inch Ball vs. the English Press 146
Steam Gong 147
*Are the Tails of Comets Reflected or Refracted Light? 147
Tin in Missouri 147
The Prussian Patent Laws 147
Illuminating Gas from Naphtha 147
A Challenge to Watchmakers 147
Effect of Our 15-inch Projectiles 147
*Erie Railway Bridge at Portage 148
The Manufacture of Iron and Steel by Means of Magnetism 148
*Silvins & Hain's Improvement in Lamps and Lanterns 149
A New Cement and Building Material 149
Storage of Petroleum in England 149
*Holland's Permanent Way 149
Trial of McCormick's Reaper at Chalons 149
*Willett's Plate Lifter 149
The Silver Mint of Japan 149
Editorial Summary 150
Manufacturing, Mining, and Railroad Items 150
Recent American and Foreign Patents 150
Answers to Correspondents 151
Inventions Patented in England by Americans 151
*Overell's Device for Piercing Cigars 152
An Improvement in Car Windows Wanted 152
How to Keep Cool 152
*Neynaber's Automatic Boiler Feeder 152
Association of Engineers and Architects 152
Petroleum for Fuel—Its Economy Considered 153
What is Labor 153
Recent Promotions at the Patent Office 153
Nitro-Glycerin—Important Decision 153
Large Issue of Patents 153
Publication of Claims of Patents Sought to be Reissued 154
Meeting of the Academy of Sciences 154
The Suez Canal—Its Present and Prospective Condition 155
Patent Claims 155, 156, 157, 158

PETROLEUM FOR FUEL---ITS ECONOMY CONSIDERED.

In last week's issue we determined the amount and the cost of the heat generated by the combustion of petroleum. The following is a resumé of our conclusions: Petroleum, weight for weight, has 50 per cent. more heating power than coal, a fact expressed by the ratio 21 to 14, or 3 to 2. If oil costs 21 cents per gallon and coal $6 per tun, then the oil heat costs six times more than the coal heat. Oil, equivalent in price to coal at $6 per tun, would cost 3½ cents per gallon; and coal, equivalent to oil at 21 cents per gallon, would cost $36 per tun.

It should be observed that the figures used in the discussion are as favorable to petroleum as could be chosen; to avoid the inconvenience of fractions, we have selected the nearest simple expressions which would make the best case for petroleum. Thus we have reckoned the gallon of oil at 7 pounds, the coal of $6 per tun as ¼ cent per pound, and we have assumed that actual practice in burning oil and coal was fairly conformable to the ratio 3 to 2. As to the practical experiments, we regret that we are obliged to say, that on the question of the economy of burning, they appear quite unsatisfactory. No authentic account of the economical results attained in the experiments with Colonel Foote's apparatus at the Charlestown Navy Yard, or on board the gunboat *Palos*, has come to our notice. Is it not a little remarkable that, in the voluminous publications in newspapers and elsewhere, the one most vital point was ignored? In the experiments with the same kind of apparatus at the Battery in this city, the whole force of the steam evaporated seems to be used in blowing the fire under the boiler. In the experiments at the Brooklyn Navy Yard, which have been very skilfully conducted under the supervision of Lieutenant Clark Fisher, 12 to 13 pounds water were evaporated by one pound of oil; but against this (in a discussion of economy) must be placed the steam raised by an independent boiler, which was used in urging the fire. Mr. Richardson, in some of his experiments at Woolwich, England, needed one-fifth of the whole steam evaporated to secure perfect combustion! So it appears that, in practice thus far, oil, weight for weight, has really done but little better than coal. We are of the opinion, however, that the ratio 3 to 2, by improvements of the burning apparatus, may be attained, but better than that nothing is to be hoped for, and perhaps nothing is possible.

As the matter now stands, the use of oil for steam fuel seems almost chimerical; the discussion of such a question here seems a waste of good ink and paper. But petroleum fuel for ocean navigation has been so much praised, that, deprecating the patience of our intelligent readers, we devote a few lines to its showing up. We use the simple figures which we have adopted above. A first-class ocean steamship puts on board 1,500 tuns of coal, of which she uses about 150 tuns per day. At $6 per tun, the cargo costs $9,000. An equivalent of oil, at 21 cents per gallon, would cost $54,000. The difference between the cost of coal and oil is $45,000; these are surely great figures for oil. But it is claimed that the use of oil will save the wages of firemen and coal passers, and a great amount of stowage. How much stowage room, if any, is to be saved after the oil is so tanked that it will be safe, does not clearly appear; but, for the argument, allow one-fourth. The accounts of oil and coal respectively stand about thus:

Cost of oil	$54,000	Cost of coal	$9,000
Deduct 375 tuns extra freight, $5 per tun	1,875	Add 10 days wages of 80 men, $3 per day	2,400
Cost of oil trip	$52,125		$11,400
Cost of coal trip	11,400		
Loss by oil	$40,725		

It is said that petroleum can be had in California at $3 per barrel (7½ cents per gallon), while coal is dearer than here. Interpolating this cost of oil in the above statement, the loss by using the oil would be a loss of only a little over $7,000 per trip. Unfortunately for this most hopeful estimate, no petroleum has yet been found in California. In California, Mexico, and on the West India Islands, there is abundance of a bituminous tar, erroneously called petroleum, which some time may be useful for fuel, but which is wholly unadapted to most of the devices for burning petroleum. The question, whether six or seven thousand barrels of crude Pennsylvania petroleum may be put on board a first-class steamship with less impunity than gunpowder and nitro-glycerin, need not come into the discussion.

WHAT IS LABOR?

To its present inhabitants, at least, this is a new country. The wildness and luxuriance of nature must be tamed and pruned to fit it for the highest needs of the race. One result is that as a people we are practical; we praise labor; we admire muscle; we reward it with political honors; our preachers preach "muscular Christianity;" our young men—nay our old men—contest for the meed of victory in base ball; the race is to the swift and the battle to the strong; gymnasiums and calisthenic schools are a part of our educational institutions, and brain work is at a discount, or rather, muscle rules.

So long as this pride of bodily strength and physical energy, is kept in its proper place, all is well, but are we not encouraging a sentiment which is unjust to the brain workers of the race? Is it true that the crowning glory of a man is his physique? Are the laborers, the muscle men, the only ones who labor? Do not others who stand in the pulpit or on the rostrum, who study in libraries, experiment in laboratories, think, investigate, and write in parlor and sanctum, actually labor? Is the projector and director less a worker than he who delves and digs? We think not. All honor to the well directed muscle which expends itself in transforming the wilderness, in improving our homes, and in constructing machinery and other appliances for human comfort and happiness; but at the same time, justice to the thinker, the writer, and speaker, who elaborates the crude idea and transforms from the shapeless ore of thought the coin of the mind.

The inventor knows how often his nights are passed in sleeplessness, and his days in abstractedness, in order to elucidate and perfect his unformed ideal. The editor knows how hand and brain become exhausted in the effort to lead, or even to keep up with the never ceasing march of improvement. The mind and body are too intimately connected for the exercise of one not to weary the other. The thinker feels a languor of the body as well as an exhaustion of the mind after protracted intellectual work. The writer calls into play a set of muscles which are among the most easily tired. The almost unceasing movement of the hand and arm in the act of writing is scarcely surpassed in any merely manual labor. Back and forth across the page and from inkstand to paper, for hours, the hand must go, until the wearied muscles refuse to perform their office. The constrained position is next in exhaustive tendency to an enforced confinement in the stocks. Often the body becomes so debilitated that when the writer is released his appetite is gone, and a languor which forbids healthy sleep succeeds.

But apart from the bodily weariness induced by the bodily exertion, the overstrained brain reacts on the body and produces a sense of physical strain not at all different from that experienced by the muscle worker. The enforced action of the will, which compels concentration of thought on one subject, produces intense weariness and pain of body. Then the frequent diversion of the attention from one subject to another, compulsory on the business man, who overlooks the different departments of his business, and the requirements of many persons, who intrude upon him every moment during the day, is anything but conducive to ease of body.

Except for those who perform the simplest and most mechanical labor, there must be brain work with muscular exertion. The unthinking worker only half works. His is the labor of the slave or the ox, with no incentive but the hour of release and the gratification of appetite. The mechanic is thoughtful of the process which the machine he tends is elaborating. He observes its failures and shortcomings and straightway sets the brain at work to improve the device. Or he finds employment for mind in devising an improved tool. Hence come some of our most valued inventions. Is this brain thought no labor? Does it not weary? It would be ridiculous to argue otherwise.

To return to the mental laborers, who among the people age faster? Their hair grows gray and their bodily functions refuse their office sooner than those of the merely mechanical laborer. Theirs is the harder lot, for the mind driven for hours in one track, refuses to stop at beck or call, and it becomes master of the enervated body and denies it rest; while the mere muscle worker finds repose as soon as the strain on the muscles is relaxed.

He is the hardest laborer who drives the brain only, and he is the most reasonable worker who judiciously divides the responsibilities and duties of life between brain and muscle.

RECENT PROMOTIONS AT THE PATENT OFFICE.

For many months the Commissioner of Patents has been promising, promising, to use the authority vested in him by law, to augment the working force of the Patent office, and thus relieve applicants for patents from the grevious delays to which they have so long been subjected. We are happy to record the fact that the Commissioner has at last taken one little step in the right direction, and now, if he will only go ahead in the same line, it may yet be possible for an inventor to obtain a patent before he grows gray.

The following is the list of promotions:—Assistant examiners Schœpf, Thatcher, Stewart, Deane, Peters and Gregory, have been promoted to be Primary Examiners.

Second assistant examiners Thayer, Coombs, Nolen, Hayes, Mygott, Tasker, Curle, Bovee, Spear, Mitchell, and Grinnell, have been appointed first assistant examiners.

Nearly all of these gentlemen have had experience in the duties of the offices to which they are now promoted, and their appointment in preference to new men will undoubtedly be of great advantage to the Patent office.

But their promotions have added nothing to the working forces, though they may perhaps pave the way for such addition. Now, Mr. Commissioner, fill up the ranks with active men, bring up the work at once, and dont wait to be urged and complained about from one end of the country to the other.

NITRO-GLYCERIN---IMPORTANT DECISION.

None of us can ever forget those fearful explosions of nitro-glycerin which took place about three years since. They were heralded by the disaster of the Wyoming Hotel in this city. A small box which had been left in the baggage-room was discovered to be on fire, and was lifted into the street at the edge of the sidewalk, when immediately it exploded with such force that it shook the ground for many blocks; the sound was heard in the most distant parts of the city, the buildings in range were greatly injured, and no vestige of the box and its contents was afterwards discovered. This was at 11 o'clock of a Sunday, the most quiet hour of a quiet day; and only one life was lost, but about a score were wounded. This seemed sufficiently fearful to those who were in the neighborhood. It needed the succeeding events to startle the whole world.

On the 3d of April, 1865, nitro-glycerin exploded in the hold of the *European* while at her dock at Aspinwall. The *European* was a powerful iron steamer, and had cost nearly $200,000. She was literally torn in pieces. A dock four hundred feet in length was destroyed, and great damage was done to the shipping and buildings of the neighborhood. In this case, as at the hotel disaster, Providence seems to have interposed for the saving of life. The number of killed was only sixty.

Then came in quick succession the details of still more fearful nitro-glycerin explosions in other quarters of the globe—from San Francisco and Sidney. In a few months we had paid tribute to this demon, hundreds of lives and millions of property. Then vengeance and punishment were ready for the guilty abettors of the destruction, if they could be found. But the efforts of justice were slow, and it may be that many years more will elapse before the law can give the demanded relief.

One of the most important cases now pending in the courts is growing out of the Panama explosion, As the event of this suit will determine others of similar character we give the latest information about it, which came by the Atlantic Telegraph.

THE NITRO-GLYCERIN EXPLOSION AT ASPINWALL—IMPORTANT LEGAL DECISION.

LIVERPOOL, Wednesday, Aug. 21.

The important suit of the West India and Pacific Steamship Company *vs.* WILLIAMS & GUION, just tried in the Liverpool Court of Assizes, has resulted in a judgement for the plaintiffs, with damages assessed at £130.000 sterling.

The suit grew out of the nitro-glycerin explosion at Aspinwall, New Granada on the third of April, 1866, by which the steamship *European*, belonging to the plaintiffs, was badly damaged while lying at her wharf in the above-named port.

The explosion also resulted in the loss of sixty lives, including those of the Captain and other officers of the steamer. The steamship *Caribbean*, of the same line, being in port at the time also sustained serious damages.

The ship was valued at from £36.000 to £40,000. Her cargo was insured for about £80,000. The damage to the *Caribbean* was estimated at nearly £10,000.

The owners of several buildings on shore, which were demolished, put in their claims for damages to a considerable amount additional.

The underwriters declined to make good the losses, and threw the responsibility upon the owners of the *European*, upon the ground that they were culpable in carrying explosive matter on their ship, and below deck.

The plaintiffs in turn brought suit against Williams & Guion, as the shippers of the nitro-glycerin, claiming that they were guilty of deception in shipping the article under the name of "glonoin oil," (a substance unknown to chemists and to commerce,) and thus involved the plaintiffs in their great losses and liabilities.

The defendents replied that they acted in the matter only as "forwarders;" that the explosive material came to them from a Hamburg house, with instructions to forward to BANDMAN, NEILSON, & Co., San Francisco, via. plaintiff's line; that they themselves were deceived by the descriptive title of glonoin oil in the manifest, and had no knowledge or suspicion of the dangerous character of the freight which thus passed through their hands in the usual course of their business.

The judgement rendered is understood to definitely settle the fact that the plaintiffs are entitled to damages. and that they cannot recover their losses from the underwriters; but the question whether the defendents are ultimately liable, or whether the plaintiffs must look to the original shippers at Hamburg, the originators of the fraud, goes to a higher tribunal for argument and decision.

Large Issue of Patents.

The patents issued for the week ending Aug. 20, numbers, exclusive of designs and reissues, one hundred and ninety. Of these, seventy-five were secured through the home office of the SCIENTIFIC AMERICAN Patent Agency, exclusive of quite a number obtained through our Washington office. Who can say that genius is dormant, if business is generally dull?

© 1867 SCIENTIFIC AMERICAN, INC.

PUBLICATION OF CLAIMS OF PATENTS SOUGHT TO BE REISSUED.

The Commissioner of Patents has put in force a new and important rule of practice in respect to applications for reissues. They are no longer to be kept secret, and information respecting the same will be furnished upon inquiry, as well as copies of proposed claims for publication. (Rules of Patent Office, §59.)

The following is the text of the official order:

U. S. PATENT OFFICE, August 17, 1867.

Hereafter all applications for reissue will remain before the examiner for thirty days without action, in order to afford time for opposition, and all such applications filed since the 1st inst. will be in like manner retained until the expiration of thirty days from date of reception by them.

(Signed) A. M. STOUT,
for the Commissioner.

The wisdom of this new regulation at once commends it self to every inventor or practitioner in patent business.

Previous to the issue of this order all applications for reissues of patents have been made the secret of the petitioner and the Patent office, and upon *ex parte* statements, claims of the most wide reaching import and extensive application have received the sanction of an exclusive government grant, and have suddenly obtruded themselves upon third parties, bearing in their train the countless evils of protracted and expensive litigation. The practice of the reissue of patents has of late years far transcended the bounds which Congress at first contemplated, and has been resorted to in cases where only a strained interpretation of the law could authorize it. A brief survey of the provisions of tho law on this subject may not be uninstructive in order to understand its import, and nature, and mode of its evasion.

The first actual provision on this subject was made by the law of 1832 (4 Stat. at Large 559) but prior to that time under the act of 1793 and other statutory provisions, the Secretary of State had power to receive the surrender of the patent, cancel the record thereof, and issue a new patent for the unexpired term, when the defect in the specification arose solely from mistake; as an indispensable necessity to the faithful execution of the promise made by the government to reward the inventor. (Grant *vs* Raymond, 6 Pet. 242; Grant *vs* Mason, 1 Law and Int. Rev. 22; Morris *vs* Huntington, 1 Paine 355–6.)

The Patent Act of 1832, (ch. 162), in pursuance of this implied power, in express terms, acknowledges the right of an inventor to a reissue when his patent is invalid or inoperative, and where by inadvertance, accident, or mistake, the terms and conditions prescribed for obtaining a patent had not been complied with. The prerequisite to the reissue was distinctly announced to be an invalid or inoperative patent, caused by defect in the formalites necessary for procuring the same, or by an insufficient specification.

The Patent Act of 1836, (ch, 357, sec.13,) contains the next provision on the subject, and the right to a reissue is there restricted to the cases where the same result is reached by reason of an insufficent or defective specification, or on account of the patentee having claimed more than he had a right to claim as new, and is continued to be confined to the case when the error has arisen by accident and without fraudulent intent. The only enactments made since that time have been introduced by the law of 1837, (sec. 8,) which regulated the powers and proceedings of the Commissioner upon the application and its partial repeal by the act of 1861, (sec. 9).

Two classes of cases have been properly the subject of review under these statutes but all based on the event of the patent being inoperative or invalid. The first class comprehends cases in which the invalidity results from a defective or insufficient specification; the second includes those in which the same objection arises by reason of the patentee having claimed more than he had a right to claim. (Goodyear *vs* Day, MS.)

The first case seems to arise from an insufficient, the second from an excessive breadth in the specification, but both depend on the prior and controlling condition that the patent is thereby rendered inoperative or invalid. The patent must be one which has no validity in the sense of entitling the patentee to an action for its infringement, (Morfit *vs* Gaab, MS.) If such a state of facts arises, and the patentee by an honest mistake has failed to secure that which he has in reality invented, and which he intended to patent, then the remedial operation of the statute becomes effectual and the consequences of inadvertence are obviated, *ex parte*. (Dyson, App. Cas,) This provison for a reissue was intended to secure inventors, as a deserving and useful class in the community, from the consequences of mistake, and was never intended to serve as an engine for the unfair expansion of claims, and the oppression of equally deserving inventors in kindred subjects, nor as a field for at once exhibiting the refinements and defects of language. To do this, the expressions of the statute must be stretched beyond all rules of correct interpretation and the word "inoperative" must be synonymed into such diluted terms as suit the convenience of the applicant.

How greatly these provisions of Congress have been perverted from their original purpose, members of almost every branch of industrial occupations can testify, so that a few years since so flagrant had become this abuse as to call down upon it the animadversion of the Supreme Court of the United States in the case of Burr *vs* Duryee, (1 Wall. 575) where it is pointedly remarked that instead of a surrender being made of invalid and inoperative patents to obtain a reissue, they were frequently obtained in the case of patents which had been repeatedly adjudged valid, and the opportunity of a reissue, instead of being resorted to for protection, was the occasion of the insertion of expanded and equivocal claims for the purpose of "catching" some fortunate competitor.

It is a remarkable fact that notwithstanding this severe condemnation of the practice by the highest court of judicature in the country the reissue of valid patents with amended, expanded and elastic claims, and for very transparent purposes, has been steadily on the increase and the decision of the court which has prohibited any examination upon a trial of the proceedings before the commissioner upon the reissue except in cases of very notorious and palpable excess of power or fraud, (however beautiful in other respects,) has been to shut the door upon every avenue of escape from the added claims except through a long and expensive defense to an action for infringement, (Allen *vs* Blunt, 2 Wood and M 138; Day *vs*. Goodyear MS., Battin *vs* Paggart 17, How. 84.)

We trust that the rules now adopted for securing open handedness in the application for reissues of patents, which has been long secured in England by the statute of 5 and 6 Will 4 c. 83, may demonstrate their wisdom by a fairer interpretation of the law and a more effiectual remedy against the grasping claims of neighboring inventors. It should be the policy of an inventor to court inquiry in the very outset, and at once save himself from the wearisome anxieties of protracted litigation and preserve others from the like misfortune. The dignity of this government grant likewise will be largely added to, if, instead of being as it now is too often the favorite theater of overlapping claims and contentious differences, it proves as it should be the secure and acknowledged property of him whose ingenuity and success, have singled him out as the meritorious object of protection and reward.

MEETING OF THE ACADEMY OF SCIENCES.

The National Academy of Sciences is an outgrowth of the American Association for the Advancement of Science, and was duly incorporated in accordance with an act of Congress, four years ago. The society is in some respects, under the direct patronage of the Unlted States, being required to report to Congress, and it being expressly provided in its act of incorporation "to hold itself in readiness to investigate, examine, experiment, and report upon any subject of science or art, whenever called upon by any department of government, the actual expense of such investigations to be paid, but the Academy shall not receive any compensation." The number of members is limited to fifty, and is divided into two classes; the class of mathematics and physics, and the class of Natural History. The late lamented Professor Bache was the last president of the Society, and its roll of membership embraces the names of the most eminent scientists in the country. The regular meetings are held each year, one in the city of Washington, the other at any place that may be selected by the Academy.

The semi-annual session this year was held in the city of Hartford, continuing over four days. We append a report of their proceedings, premising that most of the subjects treated were strictly scientific or technical in character and were not designed to be presented in a popular form, but merely for the edification of the eminent savans constituting the body.

The first public meeting of the Academy was opened by "a protest against the modern Nomenclature of Zoology" by Prof. Agassiz. In the Linnaean nomenclature the generic and specific names are retained together and under the authority of the one who proposes the names. But the later system, sanctioned by the British Association, allows the name of the species only, to bear the name of the discoverer. The tendency is, hence, to undervalue the labors of those who investigate the higher or generic classification. The action of the British Association in seeking to revise the nomenclature of past times, so as to make it conform with this modern plan, was also severely criticised in this protest.

"The Duration of the Electrical Discharge" was the subject of a paper by Prof. Rood of Columbia College. Wheatstone in his experiments had given one millionth part of a second, and in later researches Fetterson in 1861, had found one-twenty-five-thousandth part of a second to be the duration of the electrical discharge. Prof. Rood explained by diagrams illustrating his own experiments, how this discrepency in results originated, and stated that he himself, had found the duration varied from the twenty-six to the thirty-thousandth part of a second. Following this paper Prof. Agassiz introduced the subject of "Homocery and Heterocercy" relating to the form of termination of the vertebral column in fishes. This subject first attracted his attention in the course of his studies on fossil ichthyology, but some of his conclusions then adduced had since been disputed by European naturalists. On this occasion he sought by answering their objections to reëstablish his first views. He believed that this question of homocery and heterocery had an importance beyond its mere icthyological bearings, and concerned all animals possessing vertebral columns, Man and the fish are the two extremes of vertebrated animals, in this the former having the shortest and the latter the longest tails.

Prof. Gibbs of Harvard, gave the results of some late experiments on the precipitation, 1st, of copper by hypophosphorous acid; and 2d, of copper and nickel by alkaline carbonates; 3d, The employment of sand and glass filters in quantitative nalysis; 4th, The estimation of manganese as pyrophosphate.

The second days' proceedings began with an abstruse lecture on the varities of Algebra by Prof. Peirce of Harvard. The speaker went deeply into investigation and comparison of Algebraic methods, with strictures on the views of Hamilton and De Morgan. "Certain points in the Theory of Atomicities," was the subject of a paper read by Prof. Gibbs. The "Significance of Classes in the Animal Kingdom," was treated by Prof. Agassiz. The German naturalist, Oken, based the classification of animals on character, and as far back as 1811, he expressed views indicative of a belief in the existeuce of classes as the representatives of structural ideas. Since his day there has been but little advancement beyond that time. The speaker had suggested a plan of classification based on the preponderence of nerves, of muscle, or of solid frame. He believed that the division of the class of reptiles by Blainville into reptiles and batrachia, should form two totally distinct groups as they had features totally different. The latter formed an embryonic class, their growth an embryological growth, and this fact might determine their place in a future and perfect system of classification.

On the third day's session Prof. Agassiz discoursed "on the structural character of Selachians." He had chosen this subject because they are not well known, and additional information was desirable, and because during his recent tropical trip he had facilities for gaining information enjoyed by few naturalists. From his studies the Professor was convinced that the Selachian group should include besides sharks and skates, the class known as chimaera. Selachians are the first existing vertebrates and hint at the structure of man. He entered at large into the peculiar structural features of the class, showing that from every point of view, the selachians were a prophetic and explanatory type. President Hill, of Harvard, next addressed the Academy on a new problem in curvature, after which Prof. Hall, of Albany, remarked upon the "Geological relations of the Mastodon and fossil Elephant, as indicated by the position of the Cohoes Mastodon." The Mohawk river for some miles west of Cohoes and thence to the Hudson, is now running in a new channel, its old bed having been dammed up by gravel. The elevated plateau below the falls which a few years ago was covered with swampy matter, is marked by a number of pot holes of a remarkable character penetrating to a greater or less depth into the rock. The bones of the Cohoes Mastodon were found in three separate holes, but they evidently belonged to the same individual. These bones could not have been left thus separated if the commonly received opinion which accounts for all fossil remains by supposing the animal to have been imbedded in swamps, were correct, and hence the Professor argued that the monster after death was brought down by the river, left on a projection of the bank; in time the severed bones were washed into the holes where they were found or the remains of the mammoth were carried thither, preserved in the ice of the ancient glacier covering the country and were dropped here at its melting. Prof. Agassiz coincided with the latter supposition, but thought that Professor Hall did not go far enough in his views on the glacial action. Not only was the disposition of the bones the result of that action, but the potholes were also formed by glaciers. They were caused by waterfalls, as the formation of precisely similar holes by these means, in Switzerland fully demonstrated. The next paper was read by Gen. Barnard on the "Precession and Nutation of the Equinoxes, as resulting from the theory of the Gyroscope with remarks explanatory of the deviation of rifled projections." This gentleman contributed to Silliman's *Journal* some time ago, what is considered the best solution of that singular paradox, the gyroscope, ever given. The present paper was a further elaboration of his views with the applications above stated.

On invitation Hon. Henry Barnard then addressed the body on the plans and purposes of the new National Department lately established for the purpose of collecting statistics which will show the progress of education in the United States.

Professor Gibbs opened the last day's proceedings with a paper on "use or extension of the use of the Spectroscope, and its more advantageous construction." He had experimented for some time unsuccessfully to get a greater dispersive power. At last by adding sulphur to a solution of bi-sulphate of carbon, he obtained a transparent pale yellow fluid, with three times the dispersive power of flint glass. The next speaker was Professor Hall on "Certain Geological Series when traced in the Geographical Extension." Certain formations in this State have received different names at a distance of three hundred miles without any reason. The source of the sedimentary formations in the West is the same as that of the lake formations in New York.

Professor Agassiz said that the difficulty Professor Hall found (as to the occurrence of different fauna in formations otherwise the same) was identical with the difficulty we feel about the occurrence and vanishing of groups of animals. At present every area on the surface of the earth has its own peculiar animal and plant life, and no satisfactory proof existed but that the same state of affairs existed in former periods.

Professor Agassiz spoke again on the practical value of geologic investigations, showing how, in spending six weeks on the Amazon, he had been able to determine that the Amazon does not form a delta, because the residuum melts away, and the ocean encroaches on the shore. The process of washing away the coast is so rapid that no hydrographic works can be undertaken by the Brazilian government, except at a distance from shore, and a prospect of having to rebuild. Professor Agassiz then read a paper on the "Circulation of Blood in the Skate," and was followed by Professor Gibbs, on "a Method of determining Wave lengths in the Solar Spectrum." In concluding the public sessions, Professor Henry remarked on the mission and importance of the National Academy to the general interests, and closed with thanks to the public for the interest shown throughout their meetings.

KEROSENE LAMPS.—If any one wants a real good lamp let them try the "Victory"—an appropriate name. Its superior qualities and a picture of the lamp itself, are set forth on our advertising pages last week, to which we refer the reader.

© 1867 SCIENTIFIC AMERICAN, INC.

The Suez Canal---Its Present and Prospective Condition.

A correspondent of the San Francisco *Bulletin* gives the following account of the Red Sea and Mediterranean canal:

"Having landed at a little stone pier opposite Suez and on the Asiatic side, a walk of 15 minutes brought us to the bank of the canal. This is an enterprise undertaken and carried on by a French company, and is intended to connect the Red Sea with the Mediterranean and to be large and deep enough to permit the largest class of vessels to pass through into the Indian ocean. Though the distance is only about 70 miles, this is undoubtedly one of the most formidable civil undertakings of modern times. And, considering the admitted doubt of its feasibility, this is even a more daring attempt than the Pacific Railroad. The building of the Pacific Railroad was never a question other than of money and time. But after cutting this canal about 20 miles of the line to the requisite width an obstacle, thought by many to be unsurmountable, has been met with. It passes through a shallow lake for a considerable distance, and it is in this that the trouble has developed. The bottom is a quagmire, and as fast as it is thrown out fills up again by oozing in from the bottom and sides. A difficulty under which the railroad company labor, has also been found to threaten the canal builders even more formidably than it has that enterprise. It is the drifting sand of the desert that constantly moves with the wind, filling up and covering over every obstacle in its path. The railroad managers are obliged to be at work constantly to keep their track above ground. And it is claimed by many engineers to be practicably impossible to keep the canal open, even if it ever is finished. The original capital of the company was 400,000,000 francs. They had also an extensive grant of land along the line of the route from the late Viceroy of Egypt. But the present Viceroy Ishmael Pacha, is rather unfriendly to French influence and inclines to the English. This is encouraged and urged on by the diplomats of that nation, who see pretty plainly the plans of France to get possession of all northern Africa. The Order of the Bath has just been conferred upon the Egyptian with appropriate ceremonies. He has therefore withdrawn the grant of land and compromised with the company by a subsidy of money instead, amounting to about 80,000,000 francs. The original capital had been well invested, and the management has been able to report to the company that while an amount has already been expended in the prosecution of the enterprise nearly equal to the original capital stock, still a sum remains in the treasury of about the same amount for future operations. The report which has recently appeared claims that the work is going on in a successful manner, and that in six years the whole will be complete."

"Though began long before the Pacific Railroad, unless the Frenchmen are wide awake, the American road to India will be completed ahead of them. The canal is intended to be 300 feet wide and 25 feet deep. That part near to Suez, and which we visited, is being executed in the best possible manner, and if it all shall be finished equal to this section, the Suez Canal will be a work in the engineering line never before approached in the history of that science. But when it is finished the power of the Turk in Africa will have passed away and one more step toward making the Mediterranean a French lake will have been taken. The line of the canal runs almost due north from a point opposite Suez debouching at Port Said in the Mediterranean. The Russian line of steamers from Alexandria to Odessa on the Black Sea touch at this port once in a fortnight. It is about 50 miles east of the Damietta mouth of the Nile. The canal is already cut to a width and depth sufficient to permit the passage of boats from Suez to Port Said. From Suez north to a distance of 20 miles barges are towed by men or horses, and from that point to the sea small screw steamers ply back and forth. This is done by means of a small channel or ditch cut in the middle of the intended canal, and is about 25 feet wide. The ship canal is being down on each side of this to the requisite width, but in no place has it reached a sufficient depth. The depth is to be obtained by excavations to a point where the water shall prevent this class of operations, and after that by dredging. The great canal has one feeder from this branch of the Nile to supply it with water, the balance coming from the lake and the two seas that it is intended to connect. The steamers of the Peninsula and Oriental Company do not come up to Suez, but anchor in a harbor about five miles further down. In fact the little vessels that do reach the town do so only at high tide, and for a great part of the 24 hours in the day lay high and dry in the mud and sand."

ARTIFICIAL DIGESTION.—A London physician, Dr. Marcet, has announced a process by which natural digestion is similated by artificial means, and solid food may thereby be prepared for invalids. Dr. Marcet takes fifty-eight grains of muriatic acid having a specific gravity of 1·1496; fifteen grains of pepsine—the organic principle procured from the stomach of a pig or other animal. Diluted in a pint of water and added to a pound of raw meat, the whole is allowed to simmer over a water bath at about the temperature of the body, 98° F. When the meat is by this means sufficiently broken up, it is strained and the acid neutralized by eighty-one grains of bicarbonate of soda. The product is of a most agreeable character, easily digested and vastly more nutritious than beef tea. Where pepsine cannot be obtained, the doctor has found strips of calves' stomachs answer very well.

MOWING MACHINES are not very generally used in England, and the chief obstacle to their introduction has been the landlord's dread of the destruction of game, as the machines show no mercy to sitting pheasants and partridges.

OFFICIAL REPORT OF PATENTS AND CLAIMS

Issued by the United States Patent Office,

FOR THE WEEK ENDING AUGUST 20, 1867.

Reported Officially for the Scientific American

PATENTS ARE GRANTED FOR SEVENTEEN YEARS the following being a schedule of fees:—

On filing each Caveat	$10
On filing each application for a Patent, except for a design	$15
On issuing each original Patent	$20
On appeal to Commissioner of Patents	$20
On application for Reissue	$30
On application for Extension of Patent	$50
On granting the Extension	$50
On filing a Disclaimer	$10
On filing application for Design (three and a half years)	$10
On filing application for Design (seven years)	$15
On filing application for Design (fourteen years)	$30

In addition to which there are some small revenue-stamp taxes. Residents of Canada and Nova Scotia pay $500 on application.

☞ Pamphlets containing the Patent Laws and full particulars of the mode of applying for Letters Patent, specifying size of model required, and much other information useful to inventors, may be had gratis by addressing MUNN & Co., Publishers of the SCIENTIFIC AMERICAN, New York.

67,836.—FLOUR BOLT.—R. H. Alexander, Plato, Ohio.

I claim constructing a bolting reel with a hollow perforated shaft, such shaft being furnished with a hollow open end journal, all substantially in the manner and for the purposes described.

2d, The construction of the lever, G G G1, so that it will operate upon the the sliding hook rods, h h h1 h1, and cause the hooks, i i, to either stop or free all the knockers, g g, or a portion of them, as may be desired, substantially as and for the purpose set forth.

67,837.—BRIDLE REIN.—Wm. D. Andrews, New Yor city.

I claim the safety riding or driving reins, E, whether the same be made separately from, or are inclosed, and move freely within and through the ordinary driving reins, A, or whetner with or without check rein attached, as described, when the said reins are combined with, arranged and attached to the reins, E, in the manner and arranged so as to operate as described for the purpose specified.

67,838.—SLEIGH BRAKE.—John Ast, Maquoketa, Iowa.

I claim the combination of the cranks, E, and rod, B, and lever, L, with the slotted levers, C C, so as to operate substantially as above described.

67,839.—MANUFACTURE OF WHITE PAINT FROM ZINC ORES.—Nathan Bartlett, Birmingham, and George T. Lewis, Philadelphia, Pa.

We claim the employment of steam, in combination with water, in the manufacture of white paint from zinc ores, the water being so arranged that the products of combustion arising from the furnace shall be caused to pass through or come in intimate contact with the water on their way from the furnace to the bags or settling chamber, and the steam being caused to mix with such products before they pass through or come into such contact with the water, substantially as set forth.

67,840.—VALVE FOR GAS GENERATORS.—John H. Beacher, Philadelphia, Pa.

1st, I claim a valved regulator, constructed and operating substantially as set forth, in combination with and forming a part of a gas generating apparatus, as specified.

2d, The throttle valve composed of two disks with intervening strips of leather, as set forth.

67,841.—MUFF.—Louis Bauhoefer, Philadelphia, Pa.

I claim, as a new article of manufacture, a muff consisting of two or more sheets of suitable material, cut folded and stretched so as to form a number of compartments, each of which contains a body of cork, as set forth.

67,842.—AMALGAMATING PRECIOUS METALS.—John B. Beers, San Francisco, Cal.

I claim the use of amalgamated woven wire gauze or amalgamated perforated sheet metal.

I also claim, in combination with amalgamated wire gauze or perforated sheet metal, the canvas or cloth arranged under the wire gauze or perforated metal.

I also claim, in combination with the amalgamated wire gauze or perforated metal, the use of corrugated amalgamated sheet metal plated either with or without the canvas or cloth.

I also claim, in combination with amalgamated plates, the use of iron wire gauze or screens, arranged on or above the plates, substantially as described for the purpose set forth.

67,843.—CORN PLOW.—Andrew Canfield, Lyon, Iowa.

I claim the adjustable beams, A A, with joint at R, and the open link, C, also the slotted bar, D, with the clamps, E E, when constructed, arranged and operating substantially as and for the purposes above set forth and described.

67,844.—CORN PLOW.—Andrew Canfield, Lyons, Iowa.

I claim, 1st, The double bolted clevis, B, for the purpose described.

2d, The adjustable stay bar, D, for the purpose above described.

3d, The combination and arrangement of a one-horse corn plow that may be read ly changed to any required width, also changed to any number of shovels from one to three, making a single, double, or three-shovel plow.

67,845.—PORTABLE FORGE.—John M. Cayce, Franklin, Tenn.

I claim the arrangement in a portable forge of the fire-pot, D, the side tubes, K K, discharging currents of air that meet at the center of the fire pot with the fans, F F, the treadle, H, and the tool shelf, L, substantially as and for the purposes specified.

67,846.—SPORTING LIFE BOAT.—John M. Cayce, Franklin, Tenn.

1st, I claim the braces, G G, in combination with the frame, B2 B1, rods, H, keys, g g, and reel, A, substantially as and for the purpose described.

2d, The floats, K K, in combination with the arms, I I, attached to them and to the boat, substantially as described.

67,847.—LIDS FOR PAILS, KETTLES, ETC.—S. B. Cox, Buffalo, N. Y.

I claim the combination with the grooved india-rubber ring, the fasteners, and the vessel and its cover or lid, the whole arranged and combined substantially as herein set forth, of the flexible conductor pipe, C, secured to the said cover or lid by the screw joint, D.

67,848.—CORN-CANDY CUTTER.—David Davenport (assignor to Henry C. Wilkins), Albany, N. Y.

I claim the traversing block, E, carrying the knives, K K, crossing each other and operated by the spring, S S, and treadle, T, to cut the cake of candy entirely across, in each direction, at one operation.

Also, the combination of the subject matter of the above claim with the slotted plate, b, the recess, a beneath it, as described.

67,849.—TUNNEL.—Joseph Dixon, New York city.

I claim a subterranean or submarine tunnel, the walls and roof of which are constructed of rectangular metallic plates, each one of which has a lip or flange turned up around its four edges, the plates being bolted together through the flanges, arranged so as to break joints, and packed tightly at the seams, substantially in the manner and for the purpose specified.

67,850.—HARVESTER RAKE.—John A. Dodge, Auburn, N. Y.

I claim, 1st, The combination, substantially in the manner described, of the continuously revolving rake and reel arms all traversing the same track and controlled by the same guide, with a guide which lifts the beaters or reel vanes suddenly after pressing the grain back upon the platform to avoid disturbing the gavel while the rake passes over the platform to take off the grain without being lifted.

2d, The combination, as described, of the arch, f, with removable block, i, for the purpose of adapting the beater arm to be changed to a rake arm, and vice versa.

3d, The arch or bend, f, in the rake arm, as and for the purpose described.

67,851.—HARVESTER RAKE.—John A. Dodge, Auburn, N. Y.

I claim, 1st, The combination, substantially as described, of a cam plate and locking washer with a fixed spindle, for the purpose set forth.

2d, The combination, substantially in the manner described, of a series of rising and falling rake and reel arms revolving around a fixed spindle or axis with a cam guide to control their vertical movements, a cam plate to hold the rake down when raking off end, and locking washer to hold the cam plate firmly in position.

67,852.—HARVESTER.—John A. Dodge, Auburn, N. Y.

I claim, 1st, The combination of the driving axle, flanged thimble, and sprocket wheel, arranged for joint operation, substantially as described.

2d, The combination, substantially as described, of the loose driving wheel, the driving axle, the flanged thimble, the sprocket wheel, and the retaining collar, E, for the purposes set forth.

67,853.—HARVESTER RAKE.—John A. Dodge, Wm. H. Stevenson, and Howard S. Stevenson, Auburn, N. Y.

We claim, 1st, The combination, substantially as described, the combined rake and reel arms with the collar, the cam groove, and the fixed rake post.

2d, The combination, substantially in the manner described, of the cam guide and rake post, whereby the flanged collar, to which the raking and reeling mechanism is attached, can be removed by detaching the cam guide from the rake post.

67,854.—MEAT CHOPPER.—Augustus F. Doebert, Lancaster, N. Y.

I claim, 1st, The combination and arrangement of the set screws, K K, and rubber cushions, L L, with the timbers, E E, carrying the knives, D D, for the purpose and substantially as set forth.

2d, The revolving chopping block, B, having an intermittent revolving movement and a ratchet wheel, L, connected therewith, in combination with the pawl, J, and crank, H2 for the purpose and substantially as herein described.

67,855.—MOLDERS' FLASK.—Mathew M. Donnell, Cincinnati, Ohio. Antedated Aug. 11, 1867.

I claim an improved molders' flask with adjustable ends, constructed in the manner substantially as and for the purpose set forth.

67,856.—MOLDERS' FLASK.—Mathew M. Donnell, Cincinnati, Ohio. Antedated Aug. 11, 1867.

I claim the combination of the lug, F, with its countersunk hole, f, in combination with the pin, E, with its waist, e, when the two are united and held together by soft metal, in the manner described.

67,857.—MODE OF FORMING A STEEL SURFACE SHEET AND BAR IRON.—Josiah W. Ellis, Pittsburgh, Pa.

I claim the herein described method of forming a cast steel surface on bars or sheets of wrought iron.

67,858.—CLOTHES WASHER.—F. Ernst, San Francisco, Cal.

I claim placing the fabrics to be washed between perforated plates or sieves, E and D, in a closed vessel of any suitable construction, so that a vacuum, F, may be created beneath the lower plate, substantially as described.

67,859.—METAL CAN FOR PUTTING UP ALKALIES.—Horace Everett, Philadelphia, Pa.

I claim the within described can composed of a sheet-iron cylinder with folded and compressed ends, and cover, and bottom, adapted to the said ends, all as set forth for the purpose specified.

67,860 — SEEDING CULTIVATOR.—James B. Ewell, Baltimore, Md.

1st, I claim the detachable swivelling front truck constructed and combined with the frame, as described.

2d, The combination, substantially as described, with the main frame of the diagonally-arranged plows, having drag bars of varying lengths.

3d, The combination, substantially as described, of the diagonally-arranged rocking lever and cams with the vertically moving plow beam, L.

4th, The combination, as described, of the diagonally-arranged hopper and feed cylinder with the frame.

5th, The combination of the diagonal seeding cylinder, the driving gear, and the shipping mechanism, with the main frame and driver's seat, as and for the purpose described.

6th, The combination, substantially in the manner described, in a seeding cultivator, of a seed hopper, a feeding cylinder, and a series of plows all arranged diagonally to the path of the machine.

7th, The combination, substantially in the manner described, of the leading truck, the cultivating mechanism, and the seeding mechanism.

67,861.—HOOKS AND TERRETTS.—William R. Ferguson, Marseilles, Ill.

I claim a hook, F, and terretts, G G, having bases, D C C, made to fit the outer layer, A, of the back pad, and secured to it by means of rivets, h h h h, and washers, J J J J, substantially as and for the purpose herein specified.

67,862.—ORE-ROASTING FURNACE.—George B. Field, New York city.

1st, I claim the tube, G, in connection with the agitating apparatus, substantially as and for the purpose described.

2d, The eduction pipe, H, having its extremity bent upward, substantially as and for the purpose specified.

3d, The introduction of water or steam inside of hollow shelves, rakes, or agitators for the stirring or manipulating of ores in ore-roasting furnaces, substantially as and for the purpose specified.

4th, The introduction of steam generators in the inside of roasting furnaces for the purposes specified.

67,863. — APPARATUS FOR DISTILLING AND RECTIFYING SPIRITS.—André Foubert, New York city.

1st, I claim the agitating condenser, formed with the diaphragms, h, the vapor pipes, i, the caps, k, and pipe, o, supplying water for cooling the liquid on the diaphragms, as and for the purpose specified.

2d, The arrangement of the still, d, the agitating condenser, n, the rectifying column, p, and the condensers, a and t, as and for the purposes specified.

67,864.—APPARATUS FOR DISTILLING SPIRITS.—Andre Foubert, New York city.

I claim the still, a, into which the diaphragms, g h i, pipes, k, and caps, b, are introduced, the water being returned to the still by the pipes, m n, and the temperature of the liquid on the diaphragms being regulated by water flowing through the pipes, o o, as set forth.

67,865.—MACHINE FOR MAKING BUCKLES.—Merwin Fowler (assignor to Turner, Seymour and Judds), Wolcottville, Conn.

I claim the series of dies, constructed and arranged substantially as specified, and acting successively to bend up a piece of wire into a buckle bow or frame, substantially as set forth.

67,866.—BOILER GAGE COCK.—John French, Newport, Ky.

1st, I claim the special valve stem, A, in combination with the body of the cock, C.

2d, The spiral valve stem, A, the button or cup, B, in combination with the body of the cock, C, substantially as described.

67,867.—STEAM-ENGINE OIL CUP.—F. H. Furniss, Cleveland, Ohio.

1st, I claim, in combination with an oil cup, a pawl, and ratchet, so arranged as to operate the key or plug of said oil cup, substantially as set forth.

2d, The pendulum, F, ratchet wheel, J, and pawl, K, in combination with the plug, substantially as and for the purpose set forth.

3d, The gage or regulating screw, E, and plug, D, in combination with the oil cup, substantially as and for the purpose described.

67,868.—MARBLE CEMENT.—G. G. Gariboldi, Buffalo, N. Y.

I claim a marble cement, made, applied, and used in the manner, substantially as herein described.

67,869.—COOLER FOR LIQUORS ON DRAUGHT.—Joseph Gatley, Philadelphia, Pa.

I claim the cooler, A, suspended from beneath the faucet, B, or tap hole, or other opening through which liquors are drawn, from their containing vessels, substantially as shown and described.

67,870.—TUCK MARKER FOR SEWING MACHINES.—H. C. Goodrich, Chicago, Ill.

1st, I claim providing a tuck marker to be used upon a sewing machine, with a flange or lip, b, arranged in relation to the creasing devices, and operating substantially as and for the purposes set forth.

2d, I claim, in combination with a tuck marker provided with a flange or lip, b, the arrangement of a gage, D, provided with the projections, E F, substantially in the manner and for the purposes described.

3d, I claim the combination of the tucker, A, provided with the lip, b, and measuring scale, B, and with the spur, c, with the gage, D, provided with the projections, E F, when arranged and operating substantially in the manner and for the purposes described

67,871.—PLATFORM SCALE.—W. P. Goodman (assignor to Davis, Lawrence & Co.), Dublin, Ind.

1st, I claim the balance weight upon the end of the steel-yard beam, above the level of the fulcrum, when constructed with a cap, B, for piercing such weights as may be necessary in the adjustment of the steel-yard beam, and cap, B, substantially as described.

2d, The combination of the cup, B, and cap, B1, when the latter is constructed with its sides of unequal weight, substantially as and for the purpose set forth.

3d, The corner irons, K, supporting the hooked and notched hanger, K1, in combination with the notched blocks, K2, supporting the platform levers, substantially as set forth.

4th, The levers, F G H, and I, constructed with an eye in the end, and knife-edged bearing, H, in combination with the rocker block, K2, on which they are suspended, substantially as described.

5th, The combination of the rocker-block, N2, ball blocks, N, balls, N1, and check blocks, L1, substantially as set forth.

6th, The combination of the frame, L, check block, L1, and rods, M, substantially as and for the purpose set forth.

7th, The combination of the shears, O, with fins, O1, and the notched pivots, P, substantially as and for the purpose set forth.

67,872.—CLOTHES LINE REEL.—G. B. Griffin, Madison, Wis.

1st, I claim the frame, A, the reel, B B1, B2, the line, C, and the blocks, E E, when combined and arranged as described.

67,873.—MOP HEAD.—H. M. Guild, Springfield, Mass.

1st, The arrangement of the jaws, A B, hinged at C, and having the threads a a, etc., of the screw cut thereon, in combination with the nut, E, arranged so as to fit said screw threads, a a, and to bring together the jaws, A B, by turning the end holding the mop, substantially as shown and described.

67,874.—APPARATUS FOR ATTACHING WEIGHTS TO SUBMARINE ARMOR.—David Hale, assignor to himself and A. Hale, Boston, Mass.

I claim a weight-holding and attaching device for submarine armor, the same consisting of the box, divided into weight pockets or compartments, and having eyeletted flanges for securing it in place, substantially as shown and described.

67,875.—MINERS' PICK.—H. M. Hamilton, New York City. Antedated August 1, 1867.

I claim a pick or mattock, constructed with an eye open at each end, and whose sides are partly parallel and partly flaring, and adapted to the introduction of a handle whose sides are of counterpart form, and whose flaring sides are adapted to wedge in said eye, substantially as described and represented.

67,876.—CURTAIN FIXTURE.—C. T. Herrick, Independence, Iowa.

I claim the cam, E, provided with a groove in combination with the cord, I, yoke, C, and rail, A, substantially as and for the purpose set forth.

67,877.—CAR VENTILATOR.—Robert Hitchcock, Springfield, Mass.

I claim the combination of the valve, E, having the cap, c, with the case, A, having pieces, C and C', and vent hole, F, the whole being constructed and arranged substantially as herein described.

67,878.—SHAFT COUPLING.—Hiram A. Hurd, Seymour, Ct.

I claim a coupling on the face of each part, of which are formed projections, E E, and recesses, D D, one side, a, of each of the projections of a dovetail form, the other side, d, at right angles, the two parts set together and secured by key, G, inserted between the right angles or parallel sides, substantially as herein set forth.

67,879.—BRICK MACHINE.—W. G. Hyndman, Cincinnati, Ohio, assignor to himself and Henry Martin.

I claim the "wiper," D, with its flange, d, conducted and operating substantially as and for the purpose herein specified.

I also claim the construction of the outlets, G, G, with the rounded or champered corners, g g, and abrupt corners, h h, substantially as and for the purpose herein set forth.

I also claim the conical or tapering die rollers, n n, for the purpose herein set forth.

I also claim the arrangement of the rollers, n n, so as to be adjustable out and in, between the rollers, m m, substantially as and for the purpose herein specified.

I also claim the device for fastening the cloth covering around the die rollers, consisting of the longitudinal and annular grooves, r t t, and fastening strips of wood, or equivalent, substantially as set forth.

67,880.—CEMENT FOR LINING OIL BARRELS.—Samuel H. Jones (assignor to himself and Charles W. Bready), Sandy Spring, Md.

I claim the mixture and cement of glue, chalk, alcohol, turpentine, and water, in their several proportions, as herein described, and for the purposes set forth.

67,881.—THREAD WAXER FOR SEWING-MACHINES.—George F. Kendall (assignor to E. M. Dickinson & Co.), Fitchburg, Mass.

I claim the arrangement and combination of the rotary elastic disks, g h, with the shouldered shaft or pin, the collar, the nut and the screw of the pin, the whole applied to or arranged with the trough and the depresser, as set forth.

I also claim the construction of the trough, with the shoulder, a, at its bottom, and with the rotary depresser applied to the trough, so as to operate with such shoulder as set forth.

67,882.—HARVESTER.—L. G. Kniffen, Worcester, Mass.

1st, I claim the combination, substantially as described, with the main axle

© 1867 SCIENTIFIC AMERICAN, INC.

of the main gear wheel, C, the spring-ratchet, c, the eccentrically slotted tubular bed piece. D, and the shipping lever, C', for the purpose of throwing the mechanism into and out of gear.

2d, The combination, as described, of the main gear-wheel, the countershaft, carrying gears of different sizes, and a shipping lever, with the crank shaft and its pinions, all the axles being arranged with their axes parallel to each other, for the purpose of changing the speed to adapt the machine to either reaping or mowing.

67,883.—HARVESTER.—L. G. Kniffen, Worcester, Mass.

1st, I claim the shoe, L, constructed and arranged to operate as and for the purposes described.

2d, The combination with the hollow vibrating coupling arm, through which the pitman vibrates endwise, of the shoe clasping and oscillating around the coupling-arm, all the parts being constructed and arranged for joint operation, in the manner described.

3d, The combination, as described, of the finger-beam, the detachable hinged shoes, the coupling arm, and the brace-rod, with the tubular bed piece for the purpose of changing simultaneously from a front to a rear cut machine, and from a mower to a reaper, or vice versa.

67,884.—HARVESTER.—L. G. Kniffen, Worcester, Mass.

1st. I claim the arrangement as described, in a two-wheeled hinged jointed harvester, of the swinging raker's seat, with respect to the tubular main frame, driving wheels and reversible couplings, as set forth.

2d, I claim the combination of the main frame and coupling arm, with the adjusting spring catch, V, as and for the purpose described.

3d. The driver's or raker's seat, constructed of independent springs, as described.

67,885.—HARVESTER.—L. G. Kniffen, Worcester, Mass.

1st, I claim the socket plate, O, constructed to act both as a support for the lifting and tilting mechanism, and as a detent to hold the finger-beam vertical when folded for transportation, substantially as described.

2d, The combination of the lifting lever, with the swinging ratchet arranged and operating as described.

3d, The combination and arrangement substantially as described, of the socket, the lifting lever, and the swinging ratchet with the main frame, and cutting apparatus.

4th, The combination, substantially as described, of the lifting lever, the tilting lever, and the hand lever, for the purpose of either lifting or tilting the cutting apparatus.

67,886.—TURNING AXLES.—George S. Knight, Syracuse, N. Y.

I claim an improved machine for turning axles and shafting, composed of the movable jaws, B and C, cutters or "clamp mills," F and G, and screw, D, or their respective equivalent, all made arranged and operating substantially as and for the purpose herein shown and described.

67,887.—CIGAR MACHINERY.—W. Kramer, Wilwaukee, Wis., and Joseph Wise. New York City.

1st, We claim the table, c, apron, e, and mold, d, in combination with the roller, i, substantially as and for the purposes set forth.

2d, A removable mold for the reception of the filling tobacco, in combination with an apron passing into such mold, substantially as and for the purposes set forth.

3d, The arrangement of the roller, i, stock, h, table, c, mold, d, and tightening roller, g, for the apron, e, as and for the purposes set forth.

4th, The roller. l, fitted and actuated substantially as specified, in combination with the cloth, o, and roller, p, as and for the purposes set forth.

67,888.—HARVESTER RAKE.—I. Lancaster, Baltimore, Md.

I claim the application to reapers with grain binding attachment, having the platform in the rear of the reaper platform, and parallel to it or rake and fender, constructed and operated substantially as described, and for the purpose mentioned.

67,889.—HINGE.—George W. Lane, Plantsville, Ct.

I claim the two parts of the hinge, A and B, constructed so as to be attached together, and operate in the manner described.

67,890.—PLOW.—W. E. Levoy, Cincinnati, Ohio.

1st, I claim the mode of adjusting the land of the plow, substantially as set forth and described.

2d, I claim the peculiar form and curves of the mold beard, B, substantially as set forth and described.

3d, I claim the particular form and construction of the upright or sheath, G, with the brace, I, the socket, T, and the draft rod, J, in connection with the adjustable bar, K K', with the nut, L, and pin, O, as set forth and described.

4th, I claim adjusting the angle of the plow to any required slope of ground, or to level land, by means of the adjusted shackle bar, or its equivalent, substantially as set forth and described.

67,891.—WINDOW FASTENING.—Jonathan Luther, and Alexander Marsh, Worcester, Mass.

We claim the peculiar formation of a base or main piece with shoulders and lips, a a, as shown in figs. 1 and 3. in combination with spring, F, lever, C C C, and pin, E, as shown in fig. 2, for the purpose as above described.

67,892.—NIGHT CART.—John H. Lynch, Baltimore, Md.

1st, I claim the box, A, provided at the rear with a tight fitting shutter, I operated by means substantially as described.

2d, The door, C', with packing membrane and rounded corners, and secured substantially as described.

67,893.—ANIMAL TRAP.—H. Mansfield, Wassau, Ind.

I claim the combination of thimble, D, cup, C, cord, I, pully, J, hooks, o, loop, H, and standard, B, when constructed substantially as and for the purpose set forth.

67,894.—MODE OF VENTILATING AND WARMING RAILROAD CARS.—A. J. Marshall, Warrenton, Va.

I claim, 1st, In combination with a pneumatic engine, which is arranged in front of a locomotive, and adapted for being driven by means of an engine operating independently of the locomotive-driving engine, I claim the arrangement of a primary conduit, constructed as described, with flexible connections, and forming the passenger coach, and adapted also to serve as a medium through which to supply and condense air in such coach, substantially as described.

2d, In combination with a primary conduit, C4 for conducting air, and forming the roof a railway coach as described. I claim the secondary conduits, E, arranged within the car, and communicating with the said conduit for the purpose of abundantly distributing pure air to service pipes, b b, which are provided with registers, c, and arranged substantially as described.

3d, In combination with a railway coach having a double roof, or air conduit, communicating with and receiving air from a forcing engine, arranged upon the locomotive. I claim means substantially as described for warming said air, and distributing it throughout the coach, substantially as described.

4th, The warm air distributing conduits or foot rests, g g, applied beneath or between the seats of a railway coach, provided with registers, and communicating with air-heating apparatus, substantially as described.

67,895.—PAPER FASTENER.—John W. McGill, Washington, D. C.

I claim the within-described fastener, made of a single piece or strip of sheet brass, or other flexible material, bent into a T-shape by having the ends which form the legs or shanks turned over or under and run through a hole in the enlarged centre of the head of the fastener to secure said legs or shanks tightly together, so that when said legs or shanks are run through the paper or other material designed to be bound and turned down on the other side, they will not enlarge the hole in the paper, but will lie snugly together and make a close joint, substantially as herein set forth and described.

67,896.—OILER AND FILLER.—Alexander Millar, Roxbury, Mass., assignor to himself and Alfred Odiorne, Medford, Mass.

I claim, in combination with the reservoir ejecting pipe, cylinder, and piston, the false bottom, c, shallow chamber, d, and valve, f, constructed and arranged to operate substantially as set forth.

67,897.—CAR SPRING.—John S. Miller, assignor to himself and L. L. Davis, Springfield, Mass. Antedated August 5, 1857.

I claim the combination and arrangement of the spring for cars, etc., formed of a cushion of air inclosed in a case, C, of rubber, or similarly elastic material, placed within a cylinder, A, operated upon by a piston, B, the whole constructed and operating substantially as described.

67,898.—CARTRIDGE BELT.—Anson Mills, U. S. A., Fort Bridger, Utah Territory.

I claim the combination and arrangement of a series of receptacles, e e, for metallic cartridges, with a pliable band or belt, A, formed and fitted to be worn about the body, substantially as herein set forth.

67,899.—PEN HOLDER AND ERASER.—Wm. A. Moore (assignor to John G. Powell, John M. Hudder, and John M. Hudders), Philadelphia, Pa., assignor to Wm. A Morse.

1st. I claim the combination of the eraser, D, with the tip, B, and the handle, A, of a pen holder, as shown and specified, and for the purpose set forth.

2d, I claim the combination of the eraser, D, fig. 2, cap or shield, H, and handle, s, of a pen holder, as shown, and for the purpose specified.

67,900.—STOVEPIPE SHELF.—O. B. Olmsted, Beloit, Wis.

1st, I claim an improved stove pipe shelf, A A, constructed of a perforated disk in two parts

2d, In combination with the foregoing, I claim the collar, K, with the projections, D D, as and for the purposes specified.

3d, I claim the ribs, C C, when the whole is constructed substantially as herein set forth, for the purpose specified.

67,901.—MACHINE FOR CLEANING WOOL.—S. R. Parkhurst, Bloomfield, N. J.

1st, I claim the carding cylinder, a2, in combination with the cylinder, f or g, stripper. h or I, and picker cylinder, d, substantially as and for the purposes specified.

2d, I claim the doffer, e2, in combination with the mechanism substantially as specified for opening and cleaning wool or other fiber, whereby the said fiber is delivered from the picking or cleaning mechanism in the form of a sliver or bat, substantially as set forth.

67,902.—FENCE.—William Pettingell, Painesville, Ohio.

1st, I claim the base herein described, and constructed as shown in figs. 2, 5, 3, 6, and 7, viz: the skeleton or open halves, D D, angular dovetailed tenons, F F, lugs, H H, rim, G, broad flat ring, I, provided with notches, J J, combined, arranged, and operating as and for the purpose set forth.

2d. The said described base in combination with the halves of the post herein described, provided with angular dovetailed mortises, K K, fig. 8, and the bolt shown in fig. 1, as and for the purpose set forth.

67,903.—RAILROAD FROG.—A. Philippi, Elizabethport, N. J.

The construction and arrangement of the frog-point, A, and side-rails, B B, secured to the chair, C, by means of bolts, e e, passing through the body of the rails and frog-point, and countersink in the same, in combination with the wooden beds, D placed in the chair, C, and upon which the frog-point, A, and side-railsrest, the grain of the wood running crosswise, in the manner and for the purpose specified.

67,904.—ADJUSTABLE HINGE.—James G. Ralph, Aurora, Ill.

I claim the arrangement and combination of the hinge, A A, and plates, D, when constructed substantially as and for the purpose set forth.

67,905.—TRAVELING TRUNK.—Louis Ransom, Lansingburgh, N. Y.

1st, I claim a Traveling Trunk which when closed, as in fig. 1 of the drawings, shall have the form of a cylinder.

2d, In combination with a cylindrical traveling trunk, I claim two or more raised hoops or bands around the circumference thereof, to serve as wheels upon which the trunk may be rolled, while they protect the body of it from contact with the ground.

67,906.—SEWING MACHINES.—T. K. Reed, East Bridgewater, Assignor to David Whittemore, North Bridgewater, Mass.

I claim, in combination with hook, needle, and cast-off, the supplemental presser-foot, constructed and operating substantially as and for the purpose set forth.

67,907.—APPARATUS FOR MAKING NITROUS OXIDE, ETC.—M. S. Renslow (assignor to himself and Flavius Searle), Springfield, Mass.

1st, I claim controlling the amount of heat used in generating nitrous oxide or other gases, by means of a regulating or changeable outlet, p1, applied to a gas receiver having a variable capacity, when used in combination with a device for regulating the flame beneath the generating retort, substantially as described and herein set forth.

2d, I claim the variable receiver, a, having a changeable outlet, p1, in combination with the rod, c, and the lever, f, all constructed and operating substantially as described and for the purposes herein set forth,

3d, I claim the variable receiver, a, having a changeable outlet, p1, in combination with the rod, e, the bar, d', all constructed and operating substantially as described and for the purpose specified.

4th, I claim, in combination with the lever, f', the spring, y, and piece, f, having the pin, y', all constructed and operating substantially as described, and for the purpose herein specified.

67,908.—PLATFORM SCALE.—W. W. Reynolds (assignor to Howe Scale Company), Brandon, Vt.

I claim the arrangement of the links, H, as shown and described, to wit: having the links fitted in slats, i, in the bed or framing, A, and resting on pins, j, as shown in figs. 3, 4, and 5, of the drawings.

67,909.—APPARATUS FOR THE MANUFACTURE OF VINEGAR.—John Richardson, New Haven, Conn.

I claim the arrangement of the self-dumping bucket, so as to operate to empty into the generator, substantially as and for the purpose specified.

67,910.—MACHINE FOR THE MANUFACTURE OF HORSE-SHOES.—A. J. Roberts, Boston, assignor to himself and B. F. Brown, Dorchester, Mass.

I claim, in combination with the series of movable formers or pattern blocks, the swinging die-block, e2, when arranged to operate as set forth.

Also, in combination with the swinging die-block, the auxiliary presser rolls, d2, actuated by the levers which carry the rolls, V, substantially as described.

Also, in combination with with revolving formers and the bending rolls, the calk benders, operating substantially as set forth.

Also, in combidation with the movable formers and bending mechanism, the dischargers, g2, operated substantially as described.

Also the arrangement of the formers around the periphery of a wheel grooved centrally of its periphery, as and for the purpose substantially as described.

Also the sliding feed-carriage with its spring pawls, when arranged in connection with the cutting and bending mechanism, and when operated by the cam on the main shaft substantially as described.

Also, in combination with the bending mechanism, the griping jaw, g, for holding the bar while being cut, and the tooth, r, for holding the blank at its centre to prevent it from sliding endwise as the bending-rolls begin to act, substantially as set forth.

Also the cutting-blade, o, when arranged to operate in combination with the feeding mechanism, movable former blocks, and bending rolls, and when operated by the cam on the main shaft, substantially as described.

Also in a horse-shoe machine, the described arrangement of the feeding, cutting, griping, and bending mechanism, to be all operated directly from the main driving shaft, substantially as described.

Also the arrangement around the periphery of a wheel of a series of formers or pattern blocks, operating in succession, with the described bending mechanism substantially as set forth.

67,911.—TRUSSES.—Lloyd Roberts, West Haverford, Pa.

I claim the pad, B, rendered adjustable to or from the bar, A, substantially as and for the purpose described.

67,912.—APPARATUS FOR RECTIFYING SPIRITS.—August Roos, New York City.

I claim the rectifying condenser formed of the case, n i, with the segmental rings placed alternately, to arrest the vapors as they pass up through said condenser, as and for the purposes set forth.

67,913.—TRIP HAMMER.—T. J. and R. L. Root (assignors to Thomas J. Root), Andover, Ohio.

We claim, 1st, The vibrating head, E, grooved vertical shaft, F', and vibrating rod, G, in combination with the rock head, B, and treadle, F2, as and for the purpose specified.

2d, The lever, T, constructed as described, grooved shaft, F', toothed plate, V', recess in head, A, as described, and plate T3, in combination with the vibrating rod, G, ball, H', set screw, I', and bearing, S, arranged so as to operate as and for the purpose specified.

3d, The ball, H2, and set screw, J', (applied to the rod. H.) bearings, R, and treadle, F2, in combination with the subject matter of the 2d claim, as herein stated.

4th, The combination of the adjustable bearings, R R and S S, vibrating rod, G, and rod, H, with the rock shaft, O, and treadle, F2, so as to operate substantially in the manner and for the purpose specified.

67,914.—HARVESTERS.—Isaac S. and Henry R. Russell, New Market, Md.

We claim, 1st, The vibrating support, H, substantially as and for the purpose described.

2d, The wheel, A, having its axle operating in the pivoted socket, C, substantially as and for the purpose described.

67,915.—COMBINED GATE AND FENCE.—John W. Sanford, Bath, N. Y.

I claim the manner of putting together these double gates and posts with fence in combination, with sills to be set in the ground.

67,916.—BROOM HEAD.—John W. Sanford, Bath, N. Y.

I claim the combination, of the rod, c, screwed into the handle, the adjustable nut, e, cap piece, d, and band, h, fastened to the rod, c, all as and for the purposes specified.

67,917.—HORSE HOES.—George W. Sawin, Nashua, N. H.

1st, I claim the combination as well as the arrangement of the rake, I, with the blades, D D', A, and A', made substantially as described and for the purpose set forth.

2d, The combination and arrangement of the gathering in blades, A A, with the blades, D and D', made substantially as described and for the purpose set forth.

3d, The combination of the movable blade, B, with the adjustable bars, C and C', made substantially as described and for the purpose set forth.

67,918.—SPEAKING TUBES.—J. B. Shannon, Philadelphia, Pa.

I claim the flap or plate, D, hinged to and arranged on the corner of the mouth-piece, A, in respect to the opening, d, in the said cover, as and for the purpose set forth.

67,919.—REFLECTORS FOR WINDOWS.—Charles G. Smith (assignor to himself and Alexander Turner), North Bridgewater, Mass.

I claim the duplex adjustable reflector substantially as described, that is, as composed of the box, A, or its equivalent, the two mirrors, B B, the arm, C, and its clamp screw, b.

I also claim the combination of the duplex reflector, made as described, (viz: of the box, A, its mirrors, B B, arm, C, and clamp screw, b,) with the supporter, composed of the screw, E and a, bar or bars, D E, applied together and to the arm, C, substantially as specified.

67,920.—METALLIC TIPS.—Benj. F. Sparrow, Boston, Mass.

I claim the metallic upper and sole tips or guard, as made without any central flange, and with holes through it to receive screws, and arranged so that such screws may enter the outer edge of the sole when covered by such tips.

67,921.—PRESERVING ANIMAL AND VEGETABLE SUBSTANCE.—Lewis H. Spear, Braintree, Vt. Antedated August 15, 1867.

1st, I claim subjecting animal or vegetable matter to the action of a solution of a mixture of borax (biborate of soda) or any other compound of boracic acid, in connection with sulphite of soda or any other compound of sulphuric acid, in the manner substantially as herein described, for the purpose specified.

2d, I claim subjecting animal or vegetable matter to the action of a solution of sulphite of soda or any other compound of sulphurous acid, in the manner substantially as herein described, for the purpose herein specified.

3d, I claim subjecting animal or vegetable matter to the action of a solution of borax (biborate of soda) or any other compound of boracic acid, in the manner substantially as herein described, for the purpose herein specified.

4th, I claim subjecting animal or vegetable matter to the action of a solution of boracic acid, in the manner substantially as herein described, for the purpose specified.

67,922.—PENCIL SHARPENERS.—E. Spencer, Lambertville, N. J.

1st, I claim the arrangement of the gripe, d, for preventing the points of the pencil sharpener from spreading, substantially as herein described.

2d, The filling, c, in the points of the pencil sharpener, for the purposes herein specified.

67,923.—COTTON GINS.—Charles Spofford and Charles H. Hersy, Boston, Mass.

1st, We claim the clearers, U V, substantially as and for the purpose described.

2d, We also claim the yoke, Q, or its equivalent for connecting the clearers, U V, and stripper, T, to secure their simultaneous action, substantially as set forth.

3d, We also claim bracing the stripper, T, to the upper clearer, U, to stiffen and retain the former in place, substantially as and for the purpose specified.

4th, We also claim the breast beam, L, with its groove, f, and apron, M, in combination with the grating, N, consisting of the slotted bar, O, and pins, 7, operated by screws, h, or otherwise for regulating the pressure of the breast beam against the periphery of the upper feed roll, H, substantially as described.

5th, We also claim the upper feed roll, H, constructed substantially as described and for the purpose set forth.

6th, We also claim a feed roll, H, in which spiral metallic strips, y, are employed as and for the purpose set forth.

67,924.—MODE OF LIQUORING SUGAR IN CENTIFUGAL MACHINES.—Richard T. Sprague, Boston, Mass.

I claim the use, with a centrifugal sugar bleaching machine, of a portable liquoring tank constructed and operating as described.

67,925.—FAUCET.—F. P. Striker, Buffalo, N. Y.

I claim the plug, B, in combination with the movable segment, G, and groove, E, operating substantially as described and for the purpose herein set forth.

67,926.—MEDICINE.—Louis Stroever, Philadelphia, Pa.

I claim a medicine for the cure of fevers, when the said medicine is made of the ingredients herein described, and about in the proportions specified.

67,927.—PERMUTATION LOCK FOR DOORS, ETC.—T. J. Sullivan, Rochester, N. Y.

1st, I claim connecting the shaft, B, with the head, C, by the collar, D, and jaw nut, E, as herein set forth.

2d, Connecting the combination wheels to the frame, G, which is secured within the lock in the manner set forth so as to avoid extending the shaft through them or removing them with the back plate, as specified.

3d, Combining the lever, H, with the dog plate, K, by the dog, q, in such a manner that while they are bound together each is allowed a free action, as set forth.

4th, The combination of the slide, L, with the dog plate, k, and lever, H, as and for the purpose specified.

5th, The combination of the cam disk, J, with the lever, H, slide, L, and dog plate, k, as specified.

6th, Discounting the heavy bolt work of a safe door from its operating shaft when the door is locked, as specified.

7th, The combination of the bent arm, B, with the lever, H', and the bolt of the lock for the purpose set forth.

8th, The segment, Q, in combination with the dog, q', and wheels, F' F' F', as and for the purpose set forth.

67,928.—WATER METER.—J. D. Sumner, Lexington, Mass.

I claim the combination of the disk, B, flanged or tongued at or near its periphery and carrying the vanes or floats, e, with the case, A, recessed and grooved in its interior substantially in the manner and for the purposes herein set forth.

67,929.—DUMPING PLATFORM FOR HARVESTER.—Daniel M. Swartz, Lewisburg, Pa.

I claim a dumping platform, B, revolving intermittingly backward from the motion of the harvester and provided with one or more rows of teeth, C C, substantially as and for the purpose herein specified.

I also claim the cog and ratchet wheel. H, provided with the holes, h h, and groove, i, in combination with the spring pawl, I, and operating lever, L, substantially as and for the purpose herein described.

I also claim the combination of the revolving platform, B, ratchet wheel, H, spring, I, and lever, L, substantially as and for the purpose herein specified.

67,930.—BED BOTTOM.—Charles B. Tucker and L. S. Babbit, Chicago, Ill, assignors to L. S. Babbit.

I claim the arrangement of the rollers, D D, in combination with levers, F F, rods, E E, and springs, C C C, constructed to operate under slats, I, substantially as and for the purpose set forth.

67,931.—DEVICE FOR SOLDERING CANS.—J. C. Underwood and Peter Johnson, (assignors to themselves Charles A. Vaile and David Nordyke,) Richmond, Ind.

1st, We claim the springs. a, in construction with the expander shaft, D', bands, E, and hinges substantially as and for the purpose specified.

2d, The frame, F, dise, d, and adjustable spring guide, k, constructed and arranged as described for centering the can substantially as herein set forth.

3d, The combination and arrangement of the expander, D, frame, P, and rosin box, G, substantially as described for the purpose specified.

4th, The compartments, G', and wheels, H, with the pan, G, for distributing the rosin constructed and arranged to operate substantially as and for the purpose set forth.

67,932.—COFFEE POT.—J. C. Walker, Waco Village, Texas.

I claim the coffee pot above described, consisting of the boiler, A, tube, D, perforated at e e e, and box, E, having the perforated bottom, E,'' and tube G, all arranged and combined in connection with the pot, B, substantially as and for the purpose described.

67,933.—FRUIT LADDER.—S. S. Whaley, Tidioute, Pa.

1st, I claim the arrangement of the ladder upon the trundling frame in combination with the platform, A, arranged so as to be adjustable and fixed thereon substantially as herein set forth.

2d, The receptacle formed by combination of the trundling frame, B, and and platform, A, in combination with an adjustable ladder, substantially as set forth.

3d, The harness, c, combined with a ladder so as to support the person thereon substantially as set forth.

67,934.—BREAST STRAP SHIELD.—H. F. Wilson, (assignor to himself and George Esmond,) Fort Wayne, Ind.

I claim the revolving hook, A, in combination with the flange, B, the same being constructed in the manner and for the purpose substantially as described.

I also claim hook, A, flange, B, frame, C, and roller, D, the whole being combined arranged and constructed in the manner and for the purpose substantially as described.

67,935.—STEAM GENERATOR.—C. O. Winegar, Drytown, Cal.

I claim connecting each series of tubes to separate and independent chests at both ends so that each series of tubes can expand and contract without straining the others or being strained themselves.

I also claim arranging the tubes in each tie so as to form a connection between all the chests and all the tubes used substantially as described.

67,936.—STEAM ENGINE GOVERNOR.—J. H. Wooster, Strykersville, assignor to himself and Robert Dunbar, Buffalo, N. Y.

1st, I claim the arrangement of the governor, balls, A, sliding on rods, B B, radiating from the driving shaft of a steam engine and held by coiled springs, C, their arms, h', connecting with the eccentric which operates the cut off valve in such manner that the outward movement of the balls will be communicated to the eccentric and thereby control the cut off, substantially as described.

2d, The connection of the rod, h', to the eccentrics, consisting of the hub, d', collar, G, with crank like extensions, h, connected to the hub, d', by the set screw, g', constructed and arranged as set forth.

67,937.—PIPE WRENCH.—W. C. Abbe, Petroleum Center, Pa.

I claim the segmental jaws, B C, in combination with the lever, A, constructed and operating substantially as and for the purpose described,

67,938.—COMBINED LOCK AND KNOB LATCH.—E. G. F. Arndt and C. E. L. Moebius, New York City.

1st, I claim the square or polygonal hub, D, when arranged between the arms, c and d, of the bolt, in the recess, e, which is narrow at the ends substantially as and for the purpose herein shown and described.

2d, The stem, H, when made partly square, (or polygonal) and partly round in combination with the guard plate, M, and spring, O, all made and operating substantially as and for the purpose shown and described.

3d, The vibrating tumblers, E and F, when pivoted together and arranged substantially as herein shown and described, in combination with the bolt, C, spring, G, and square or polygonal hub, D, all made and operating substantially as herein shown and described.

4th, The guard plates, L and M, in combination with each other and with the stem, H, and pin, K, all made and operating substantially as and for the purpose herein shown and described.

5th, A spring bolt lock which is constructed that it can be operated by a stem, H, and key, J, or by the latter and a night key, N, or by all three, or by the key, J, substantially as and for the purpose herein shown and described.

67,939.—BOILER.—John Baumeister, Detriot, Mich.

I claim the strainer, C, constructed and arranged substantially as described in combination with the vessel, B, and the boiler, A, for the purpose set forth.

67,940.—HARROW.—Lemuel Bickelshymer, Leavensworth, Kansas, assignor to himself and Granderson T. Deering.

1st, I claim the harrow shoes, K1 or K, to which the teeth, k, are attached, in combination with the connecting bars, L, levers, M, connecting bars. N, and crank wheel, O, by which motion is communicated from the gearing to the said shoes or shoe, substantially as herein shown and described.

2d, The combination of the lever, G, with the stationary frame, C, or tongue, D, and with the movable frame, F, substantially in the manner here in shown and described and for the purpose set forth.

67,941.—DISINTEGRATING AND BLEACHING WOOD AND OTHER MATERIALS TO FORM PAPER PULP.—Jean Bernard Biron, France.

I claim the employment, as a bleaching agent, of alkaline sulphurets, in the manner and for the purposes substantially as above set forth and described.

67,942.—DOOR FOR STOVES AND FURNACES.—Frank S. Bissell, Pittsburgh, Pa.

I claim a stove or furnace door which is closed by springs, substantially in the manner herein shown and described and for the purposes set forth.

67,943.—ANCHORING STATIONARY MACHINERY.—Samuel Boone, Le Gros, Ind.

I claim the anchors, A B, secured to the power, H I, by means of the swivelled screw rods, A C and B F, all constructed as described, whereby the force of the draft is resisted, substantially as described for the purposes specified.

67,944.—FENCE.—L. H. Bowlus, Knoxville, Tenn.

1st, I claim pivoting or hinging the lower end of the central cross bar, b3, to the lower part of the short post, A, substantially as herein shown and described and for the purpose set forth.

2d, Securing the panels, B, when in an erect position by hooks or catches, C, pivoted to the upper parts of the posts, A, and taking hold of the central cross bars, b3. of the said panels, substantially as herein shown and described and for the purpose set forth.

67,945.—VENTILATING ATTACHMENT FOR STOVES.—Thos. S. Bowman, St. Louis, Mo.

I claim the base, B, and the drum, C, arranged and operating as herein shown and described, in combination with a stove and stovepipe, substantially as and for the purposes set forth.

67,946.—AXLE BOX.—Hugh Brady, Factoryville, N. Y.

I claim the friction rollers, e e, hung in the disk bearings, g g, in combination with the partitions, d d, enclosed in the axle box, a, constructed, arranged, and operating substantially as and for the purpose herein described.

67,947.—LINING FOR OIL BARRELS.—William R. Bree, Pottsville, Pa.

I claim the composition above described, when made and used, substantially as and for the purpose specified.

67,948.—MEASURE FOR LIQUIDS.—Purcel Brinkerhoff, Chillicothe, Mo.

1st, I claim the combination of the vessel, A, with the cylinder, B, tube, C, groove, b, and apertures, d r r1, all arranged and operating substantially as described.

2d, The nozzle, f, combined with the cylinder, g, and the cylinder, B, substantially as described.

3d, The lever, J, stop guide, m, in combination with vessel, A, and supply pipe, G, all arranged and operating substantially as and for the purpose set forth.

67,949.—CORN CULTIVATOR.—P. F. Brittain, Geneseeo, Ill.

I claim the marking device consisting of the bars, h h, beam, G, and standards, H, in combination with the frame, A, of a corn plow, substantially as set forth.

67,950.—CLOTHES DRIER.—Harvey Brown, New York city.

I claim the combination of the compartment, A, removable bars, C, and cleats, D, substantially as described and for the purpose specified.

67,951.—BASE-BALL TABLE.—W. Buckley, New York city.

1st, I claim the base-ball table, constructed as described, consisting of the table, A, bases, B C D E, bat, F, lever, G, runners, K, keys, M N O P S, fielders, T, movable line, U, and balls, W V, all operating as described for the purpose specified.

2d, The pivoted runners, K K U, operated by levers and keys, substantially as and for the purpose shown and described.

3d, The V-shaped catchers, T T, constructed substantially as and for the purpose specified.

67,952.—ATTACHMENT FOR PREVENTING HOGS FROM ROOTING.—John Butts, Evansville, Wis.

I claim the roller attachment, A, substantially as and for the purpose described.

© 1867 SCIENTIFIC AMERICAN, INC.

67,953.—CENTRIFUGAL MACHINE OR HYDRO EXTRACTOR.—E. C. Cleveland, Worcester, Mass.

1st, I claim the hydro extractors and the basket when hung for operation, substantially as and for the purpose described.

2d, I also claim, in combination with the above, the counter weights applied to the basket shaft, substantially as and for the purpose specified.

67,954.—DEVICE FOR PREPARING PLATES FOR SPRINGS.—Jas. B. Cleveland, Hackensack, N. J.

I claim the combination of the dies, C C1, blocks, G, fixed dies, d d, in the block, E, slotted lever, D, wheel, C, and roller, A A, as herein set forth for the purpose specified.

67,955.—CORN AND CANE HARVESTER.—E. H. Clinton, W. Prather, and H. O. Hutchinson, Iowa City, Iowa.

1st, We claim the discharging frames, I I, applied to the frame, A, and actuated through the medium of the lever, J, substantially as described.

2d, The combination of the circular saws or cutters, H, arms, N N, connected with the shafts, M, provided with the arms, u, at their upper ends, and discharging frames, I I, all arranged in connection with the mounted frame, A, to operate substantially in the manner and for the purpose set forth.

67,956.—CHAIR.—Francis J. Coates, Cincinnati, Ohio.

I claim the combination and arrangement of the seat, F, pivoted centrally to the sides, C, and having upon its under side the quadrant-shaped sector, I, provided with teeth, a, upon its circular edge, and the spring lever, J, having the prong, b, and hinged to the forward rail, D, substantially as described for the purpose specified.

67,957.—CRANK CONNECTION.—Ed. R. Cole, Pawtucket, R. I.

1st, I claim, in combination with the sliding box, E, and grooved guide of the shaft, A, the adjustable sides for the groove or way of the sliding box, substantially as and for the purpose specified.

2d, I also claim the adjustable sides for the groove or way of the sliding box, substantially as and for the purpose described.

67,958.—DIE FOR CUTTING THREADS ON TUBES.—Wm. T. Cole (assignor to Jacob F. Hunter and Peter P. Keller), New York city.

1st, I claim the combination of the base plate, A, pivoted die plate, B, spring, C, lever, H, and link, I, arranged substantially as described.

2d, The combination with the above of the clutch, C, applied and operating in the manner and for the purpose specified.

67,959.—ANIMAL TRAP.—Isaac N. Connell, Spencer's Station, Ohio.

1st, I claim the combination and arrangement of the trigger plate, K, arm, M, supporting bar or bolt, l, with each other and with the pivoted platform, H, and box, A, of the trap, substantially as herein shown and described and for the purpose set forth.

2d, The combination of the spring, N, with the pivoted platform, H, and bar or bolt, I, substantially as herein shown and described, and for the purpose set forth.

3d, The removable pivoted partition, O, and weight, P, arranged in relation with the trigger plate, K, pivoted platform, H, bar, I, and trigger, L, as herein set forth for the purpose specified.

67,960.—CHURNING MACHINE.—Gurnsey Crandell, Rhinebeck, N. Y.

I claim the combination of the sliding bar, E, connecting rod or rods, F, crank shaft, G, fly wheel, H, and operating rod, I, with each other and with the frame, A, substantially as herein shown and described and for the purpose set forth.

67,961.—COTTON PRESS.—Jas. G. Cummings, Columbus, Miss.

1st, I claim the bevel wheel, C, provided with the projecting rim forming an annular track resting on rollers, h h, and having the hub, i, for the passage of the screw, F, step, K, which bears the bevel wheel. C, and is secured to the frame, G, and trunk, A, when all are constructed and arranged as herein set set forth for the purpose specified.

2d, I claim, also, the shifting head block, B, in combination with the rollers, d d, the rail track, e e, and the trunk, A, arranged and operating substantially as and for the purposes herein described.

67,962.—CAR BRAKE.—John Davis, Alleghany City, Pa.

I claim the sliding frame o, clevis, 13, and pawl, 11, when used in combination with the hand lever, 14, provided with ratchet, o, chain, u, and shaft, g, provided with arms. p 7 and 8, constructed, arranged, combined and operating in the manner, substantially as herein described.

2d, The shaft, g, provided with arms, 7 8 and p, when used in combination with the springs, f and e, rods, t and m, and brakes constructed, arranged combined and operating in the manner substantially as herein described and for the purpose set forth.

67,963.—SLATE CUTTER.—T. R. Drummond, Hartford, Ct.

1st, I claim the four sided box knife, F, the elastic block, G, and the cushion within the cutters on the block, D, arranged and operating substantially as described and for the purposes set forth.

2d, in combination with the cutter box knife, F, I claim the springs, a a, or their equivalents and also the use of springs under the cushion of the block, D, substantially as and for the purposes set forth.

67,964.—CHURNS.—C. L. Eggert, Lawrence, Kansas.

I claim the combination and arrangement of the gear wheels, G H I, and shafts, C D E, with each other, with the dashers, J K and with the frame, E, and body, A, of the churn in combination with the double dashers, J and K, constructed, arranged and operated substantially as herein shown and described.

67,965.—SEWING MACHINE.—George Elmes, Chestertown, N. Y., assignor to himself and F. B. Wells, Canaan, N. H.

I claim the reciprocating rod, A, provided with the incline, e, on the head, a, the pin, d, and the spiral spring, g, in combination with the driving wheel, C, and presser foot of a wax thread sewing machine, arranged and operating substantially as and for the purposes herein shown and described.

67,966.—OSCILLATING PISTON ENGINE.—W. H. M. Elrod (assignor to himself and G. L. Williams), St. Louis, Mo.

1st, The oscillating piston, C, the hollow shaft, E, the oscillating valve, D, with its hollow valve stem, F, combined and arranged substantially as shown and described for the purpose of forming an oscillating piston steam engine as set forth.

2d, I claim the lever, m, the disk, J, the arm, h, the lever, C, and the pins or studs, i i and k k, arranged substantially as described for the purpose of reversing the motion of the piston as set forth.

3d, I claim the chamber. G, on the side of the cylinder, substantially as shown and described.

67,967.—TRACE FASTENER.—G. W. Fink, Pleasant Plains, Ill.

1st, I claim the cock eye or button, C, furnished with the eccentric groove, c, substantially as described.

2d, The metallic loop, B, constructed to carry the prolongation of the trace, A, with the eye, b, fitted to receive the buttom, C, substantially as described.

3d, The combination of the trace tongue, A, with the eccentric groove of the cock eye, substantially as described.

67,968.—CARRIAGE PROP.—William Finn, Poughkeepsie, N. Y.

1st, I claim the standard, C, when provided with a dovetailed wedge shaped tenon, d, in combination with the plate, B, which has a wedge shaped dovetailed groove, c, in a circular projection, b, as set forth.

67,969.—APPARATUS FOR SOLDERING EAVES TROUGHS.—Charles and George Fisher, Tecumseh, Mich.

1st, We claim the construction and arrangement of the right angular clasps, D, provided upon the inner end with a flange, b, and pintle pivoted to the lever, o, and adjusted by means of the ratchet bars, F, substantially as described for the purpose specified.

2d, We claim the cam washers, n n n, so as to throw or carry the levers, o o o, and clasps, D D D, out from over the edge of the trough or box, A, when the said levers are raised up so that the gutter can be removed substantially as shown and described and for the purposes set forth.

67,970.—FISH FLAKE.—Joseph Foster, Beverly, Mass.

I claim the arrangement of a sun screen, C, in combination with the frame of a fish flake suspended on posts, a a, and operating substantially as and for the purposes described.

67,971.—CARBURETING APPARATUS.—E. J. Fraser, Erie, Pa

I claim the vessels, A and B, the water cylinder, C, the plate coil, D, and the retarding curtains, D, when the same are constructed, arranged and combined substantially as shown and described for the purposes set forth.

2d, In combination therewith, I claim the air pipe, G, and the space, L, substantially as and for the purposes described.

67,972.—VOLUTE SPRING.—John Freeland and Daniel Ward, New York City.

We claim the improved volute spring formed of a single metal plate slit longitudinally nearly its whole length with both ends uncut and the divided parts spread apart in the middle coiled substantially as herein shown and described.

67,973.—MODE OF TREATING WATER TO PREVENT INCRUSTATIONS OF STEAM BOILERS.—M. A. Glynn, Havana, Cuba.

1st, I claim the process of treating water for steam generators with bark of the rhizophera mangle, in manner and for the purposes substantially as above described.

2d, The process of treating water for steam generators with said bark of the rhizophera mangle in combination with chloride of sodium or its equivalent in manner and for the purposes substantially as above described.

67,974.—OILER.—J. H. Godwin, Scotland Neck, N. C.

I claim an oil can constructed with a shallow cylindrical body and an inclined nozzle in combination with the spring or springs, A, placed within the body of the said oil can, substantially as and for the purpose set forth.

67,975.—MACHINE FOR CUTTING AND GRINDING CORN FODDER.—Alexander Goodhart, Newville, Pa.

I claim the combination and arrangement of the cutters, E E, and teeth, l l l, upon the vertical drum, D, working in an upright cylinder, A, provided with teeth, c c, substantially as and for the purpose specified.

67,976.—PLOW.—C. W. Grant, Iona Island, N. Y.

1st, I claim the supplemental share, G, and land slide, F, when used in connection with or applied to an ordinary tillage plow, substantially in the manner as and for the purpose set forth.

2d, The supplemental or auxiliary share, K, applied to the share and moldboard, substantially as and for the purpose specified.

3d, The two coulters H H, applied to the beam and used in connection with the supplemental share, G, and land side, F, substantially as and for the purpose set forth.

4th, The supplemental strips, L, for the mold board, C, when used in combination with the supplemental share and land side, substantially as and for the purpose specified.

67,977.—TOPS FOR COOKING STOVES.—James Grimes, Portsmouth, O.

I claim the rim, B, constructed in one or more pieces secured to the lugs, b b, of the plate, A, by means of screw bolts passing through the lugs, said holes being enlarged to admit of the expansion and contraction of the plate, A, independently of the rim, B, as herein shown and described.

67,978.—ROTARY ENGINE.—Melancthon Hamford, Boston Mass.

I claim the herein described arrangement of the smaller piston, B', and large piston, B, provided with projections, f, as and for the purposes set forth

67,979.—SAD IRON.—C. C. Hare, Louisville, Ky.

1st, I claim the handle, B, provided with the curved shank, C, and pivoted brace, D, in combination with the curved socket, E, upon the iron, A, substantially as described for the purpose specified.

2d, The iron, A, and handle, B, fitted together by means of the shank, C, upon the latter fitting into the socket, E, of the former on the shank, C, upon the former fitting into the socket, E, of the latter and retained position or released by means of the pivoted brace, D, substantially as described for the purpose specified.

67,980.—WASHING MACHINE.—G. W. Havermale, La Harpe, Ill.

I claim the combinat on and arrangement of the crank shaft, F, gear wheel H, pinion, I, upon the shaft, J, and the balance wheel, k, and press board, B, and beater, D, as herein set forth for the purpose specified.

67,981.—PHOTOGRAPHIC APPARATUS.—D. H. Houston, Cambria, Wis.

1st, I claim the securing the ground glass, F, by the spring, G, movable by means of the lever, H, substantially as described.

2d, Securing the sensitive plate, K, in place when exposed in front of the ground glass, F, in the manner and by the means, substantially as described.

3d, The grooved and numbered scale carried on the lid of the camera, substantially as described.

4th, The employment of orange or yellow-covered glass, on which to focus the object in view, in manner and for the purposes substantially as described.

5th, The construction of the diaphragm, D, as herein set forth, for the purpose specified.

6th, The employment of the keys to secure the sensitive plate in place, in the carrying frame, with or without the slips, R, substantially as described.

7th, The application of the spring, G, for securing the sensitive plate in the camera, substantially as described.

8th, The employment of an adjustable spring, at one or both ends of the sensitive plate, whereby the same is secured or loosened at pleasure, in the carrying frame, substantially as described.

9th, The application of the spring, P, and lever, O, as attached to the carrying box, substantially as and for the objects desired.

10th, The carrying frame, B, constructed as described, when combined with the camera, A, as and for the purpose specified.

67,982.—MEANS TO PREVENT ROPES FOULING SHIPS' PROPELLERS.—Richard Harvey Hudson, Glasgow, Scotland.

I claim the disk, D, of steel, or steel sheathed, attached to the stern post or under post of a vessel, in manner and for the purpose substantially as described.

67,983.—BOAT-DETACHING TACKLE.—E. C. Hurlbut, Middle Haddam, and E. H. Snow, Hartford, Ct.

I claim the combination and arrangement upon the bottom of the boat, of the standards, C' C', to which the hooks, F F, are pivoted, the points of the latter passing through the perforations in the projecting lips, G G', thereby securing the looped ends of the chains, c' c', and operated by means of the pivoted rods, E, and lever, D, pivoted to the standard, C, in the centre of the boat, substantially as described, for the purpose specified.

67,984.—MODE OF MANUFACTURING WATER PAILS AND OTHER HOUSEHOLD VESSELS.—John William Jarboe, Greenpoint, N. Y.

I claim the manufacture of pails and other articles of household furniture, for holding water, etc., made of paper, in the manner substantially as herein shown and described.

67,985.—WATCH.—E. Jewell, Louisville, Ky.

I claim the divided spring band, D, encircling the works of a watch situated between the enclosing plates, its ends notched to fit over the main spring bar, C, substantially as described, for the purpose specified.

67,986.—SEEDER CULTIVATOR.—F. B. Johnson, De Witt, Iowa.

1st, I claim operating the slide cut-off, F, by a bent lever, H, pivoted to a support, h', attached to the seed box, D, substantially as herein shown and described, and for the purpose set forth.

2d, Adjusting the movement of the slide cut-off, F, by means of a set or gage screw, F, acting upon the lever, H, substantially as herein shown and described, and for the purpose set forth.

3d, The combination of the stirrer, K, constructed as described, with the seed box, D, caps, J, and zigzag or waved wheel. L, attached to one of the wheels, A, substantially as and for the purpose herein set forth.

4th, The combination of the movable inclined seed board, E, with the bottom of the seed box, D, substantially as herein shown and described, and for the purpose set forth.

5th, Attaching the plow beams, m', to each other, and to the clevises, N, bolted to the axle, B, substantially as herein shown and described, and for the purpose set forth.

6th, The combination of the bar, R, and bent lever, U, with the support and guide rod, V, and with the plow beams, m', substantially as herein shown and described, and for the purpose set forth.

7th, The combination of the lifting foot lever, W, with the bent guide lever, U, and with the tongue, C, of the machine, substantially as herein shown and described, and for the purpose set forth.

8th, The combination of the lifting and guide bar, O, with the plow beams, m', substantially as herein shown and described, and for the purpose set forth.

9th, Attaching a catch, P, to the lifting and guide bar, O, substantially as herein shown and described, and for the purpose set forth.

67,987.—WRENCH AND PRUNING SHEARS COMBINED.—John S. Kalb, Fostoria, Ohio.

1st, I claim the jaws, A B, rack, D, in combination with the spring, I, and stirrup, C, combined and operating conjointly, substantially as and for the purpose set forth.

2d, I claim combining the pivoted jaws, A B, and spring, I, with one or movable blades or cutters, arranged as and for the purpose set forth.

67,988.—PETROLEUM STILL.—E. G. Kelley, New York City.

1st, I claim providing a still for petroleum or other hydro-carbon liquids, with two pipes, F and I, for carrying off and separating the products of distillation, substantially as set forth.

2d, The cylindrical boiler, B, in combination with the inclined vessel, C, in which are inclined diaphragms, D, or their equivalents, substantially as and for the purpose herein shown and described.

3d, The above, in combination with the inclined pipe, F, when the same is arranged and set forth, and with the pipe, I, all made and operating substantially as and for the purpose herein shown and described.

67,989.—BOAT DETACHING TACKLE.—George H. Kempton, Hudson, N. J.

I claim the application of the double-weighted hook to the ring and chains, C C D, all combined and operating for the purposes specified.

67,990.—WASHING MACHINE.—D. H. Kranser, and G. N. Bowman, Pottsville, Pa.

1st, We claim the legs, H, attached to the sides of the box, A, in an inclined position, the longer legs having pivoted in their upper ends the curved oscillating arms, B, as herein set forth, for the purpose specified.

2d, The oscillating arms, B, constructed as described, the lower convex side having parallel convex slats, C, and its bottom edge board, D, inclined to form an acute angle with the convex sides, its upper end curved in the arc of a circle, in such a manner that in its oscillations it shall completely fill the slot in the cover, E, preventing the escape of liquid, as herein set forth, for the purpose specified.

3d, The curved false bottom, J, arranged in relation with the inclined board, D, and convex slats, C, upon the oscillating arm, B, as herein set forth, for the purpose specified.

67,991.—MEAT WASHER.—J. Lefeber, Cambridge City, Ind.

I claim the toothed sliding plate, a, in combination with the corrugated roller, C, and the hinged frame, B, arranged and operating substantially as and for the purpose herein described.

67,992.—MODE OF TREATING PRECIPITATED LEAD TO DESTROY ITS CRYSTALLINE CHARACTER.—G. T. Lewis, Philadelphia, Pa.

I claim subjecting the precipitates of lead to the combined action of friction and pressure, substantially as and for the purpose described.

67,993.—EXPANDING DIE.—B. T. Loomis, New York City.

1st, I claim the combination of the dovetailed cutters, B, interior slotted tube, C, and cutter seat, A, with each other, substantially as herein shown and described, and for the purpose set forth.

2d, The combination of the band or nut, D, with the cutter seat, A, and interior slotted tube, C, substantially as herein shown and described. and for the purpose set forth.

67,994.—WATER WHEEL.—O. W. Ludlow, Dayton, Ohio.

1st, I claim the construction and arrangement of the arms, b, attached to the pivoted rods, a, of the buckets, G, their inner ends connected by the rods, C, to the sliding collar, H, operated by means of the rods, K, and lever, L, as herein set forth, for the purpose specified.

2d, The vent tube, or ventilating pipe, P, applied to the draft tube, O, and provided with a valve, substantially as and for the purpose set forth.

67,995.—COAL CHUTE.—Ephraim Maguire, Kewanee, Ill.

I claim the hinged bar, E, rod, F, and rope, H, arranged and employed as described, in combination with the doors, B C, notched arms, D2, and catches, G, all arranged and operating in the manner and for the purpose specified.

67,996.—APPARATUS FOR STRETCHING SKINS.—Agustus Marsh, Newark, N. J. assignor to himself and William Hogg, Melrose, N. Y.

I claim the frame, A, with the double sockets, b, screws, c, when constructed and operated substantially as described for the purpose of stretching raw or tanned hides or skins.

Also the nippers and straps in combination with frame, A, for attaching the skins or hides thereto for the purpose of stretching the same.

67,997.—PREPARING VEGETABLE FIBERS FOR TEXTILE AND OTHER FABRICS.—Henri Messmer (assignor to himself and Isaac Hey, Jr.), Newark, N. J.

I claim the process herein described of treating fibrous plants for the purpose of separating or extracting the fiber therefrom, substantially as set forth.

67,998.—ROOFING COMPOUND.—A. H. Mott, Daniel Winer, and Lawrence Brink, Lockport, N. Y.

We claim a roofing or sizing compound substantially as described.

67,999.—HINGE AND BLIND SUPPORTER.—W. W. S. Orbeton, Haverhill, Mass.

I claim the said blind supporter made substantially as described, as a new article of manufacture.

68,000—CHURN DASHER.—J. W. Pettengill, Rockford, Ill.

I claim a dasher for churns etc., consisting of three or more perforated dishes or plates, C D and E, arranged together substantially as and for the purpose described.

I also claim the center piece to the stem or handle carrying angular perforated wings substantially as and for the purpose described and whether used in combination with the three or more disks to such stem or not.

68,001.—PRINTING PRESS—C. Potter, Jr., Westerly, R. I.

I claim the hook projections, E E, at the under side of form bed, C, in combination with the levers, G G, when the latter are arranged in such a manner as to admit of being adjusted relatively with the former by the screws or pins, c, or their equivalents for the purpose specified.

2d, The pivoted nuts, e, in the lower parts of the levers, G G, in connection with the screws, f, arranged as shown or in an equivalent way, for the purpose of regulating the tension of the springs, I, as set forth.

68,002.—WHEEL FOR VEHICLES.—H. A. Potter, Providence, R. I.

1st, I claim the beveled felloes, A, in combination with the plate, C, tire, B bolt, D, provided with cam, E, substantially herein shown and described and for the purpose specified.

2d, The sliding blocks, F H, in combination with the tire, B, plate. C, and bolts, D, substantially as herein set forth and for the purpose specified.

68,003.—WAGON JACK.—R. B. Prindle, Norwich N. Y.

I claim the arrangement and combination of the slotted post, A, sliding gate, B, with its hooks, e e, connecting rod, E, and crooked fulcrum lever, D, whereby the weight is raised and held by the lever without the aid of other fixtures as herein described.

I also claim the adjustable slide frame, h h, attached to the gate, B, in the manner described operating substantially as and for the purposes herein set forth.

68,004.—ANTI-DYSPEPTIC BITTERS.—C. T. Provost, N.Y.City.

1st, I claim the combination of hard cider with other ingredients for anti-dyspeptic compounds.

2d, An anti-dyspeptic stomach bitters, composed of the ingredients in the manner set forth

68,005.—CONDENSED LEATHER PEG.—Chas. and Jos. G. Rowland, Quincy, Ill.

We claim a peg made of condensed leather whether the same is made in the form of single pegs or in the form of a corrugated or plain strip from which the pegs may be cut, substantially as described.

68,006.—MACHINE FOR MAKING CONDENSED LEATHER PEGS. Charles and Joseph G. Rowland, Quincy, Ill.

1st, We claim the process of making pegs, by compressing or condensing leather substantially as described whether the pegs be severed at the time of compression or the strips be first condensed and then cut into separate pegs.

2d, We claim two or more rolls having recesses or dies formed on their periphery and arranged to operate as described for the purpose of compressing leather or other material to form pegs substantially as set forth.

68,007.—WIND MILL.—Jos. Schenker, Brownsville, Minn.

I claim the self-acting shut-off of the bellows, G, operated by the weighted rod, I, pins, q q', arm, r and r', on rod, S, and rod, L, and by the aid of the spring, f, and weighted lever, u, all substantially as and for the purpose herein shown and described.

68,008.—REVOLVING CYLINDER ENGINE.—Chalmers Scott and William H. Morton, Hamilton, Ohio.

We claim the arrangement of the hollow revolving shaft, D, having the stationary bar passing through it, to which is secured the arm, a, cylinder, A, fly wheel, E, and stand, C', substantially as described, for the purpose specified.

68,009.—SEWING MACHINES.—C. Stebbins, Pike, N. Y.

1st, I claim the combination of the cloth-presser, Q, the thread-lifting lever, C, the tension device, B, the catch, A, the cast-off, D, and the lever, E, the said combination being organized substantially as described, so that by its mode of operation slack shall be given to the thread according to the thickness of the work when the eye of the needle reaches the surface of the cloth, as and for the purposes specified.

2d, Interlocking the shuttle thread with itself in its passage from the bobbin to the work, after passing in and out through the holes, 1, 2, 3, in the shell, substantially as and for the purposes herein described.

3d, The curved passage formed by the lip, h, in the needle throat, substantially as and for the purpose specified.

4th, The combination of the eccentric, n, sliding rod, m, stirrup, p, and dog, k, substantially as herein shown and described, for the purpose specified.

68,010.—LEACHING TAN BARK.—Abraham Steers, New York City, assignor to himself and Henry L. Elder, and S. H. Kennedy, Philadelphia, Pa.

1st, I claim passing the menstrum through the bark contained in the leach or leaches in an upward instead of a downward direction, substantially as and for the purpose described.

2d, Heating the bark with live or exhaust steam after the same has been partially extracted by the cold menstruum, and then washing it out with water or weak tan liquor, substantially as and for the purpose set forth.

3d, The use of the perforated false top or perforated guard channel, h, in combination with the still, to prevent the bark from passing into the pipes with the liquor, substantially as described.

4th, The use of a forced current of liquid or fluid through the matter operated on, and the adjustment of the second connecting pipes and valves for that purpose, whereby the force of the pump can be used to clear out obstructions in the piping, as set forth.

5th, Forcing the liquor through a series of leaches by the action of a pump or by means of steam, or both combined.

68,011.—FRUIT STEM CUTTER.—Albert Strong and James A. Dadmun, South Boston, Mass.

We claim said fruit stem cutter, constructed substantially in manner as represented, and to be used as described, viz.: of the blade and tube connected and arranged as set forth, and the notch formed in the latter, the whole being as and for the purpose specified.

68,012.—MANUFACTURE OF AUGERS.—J. Swan, Seymour, Ct.

I claim the method of constructing auger bits by means substantially as herein shown and described.

68,013.—SEWING MACHINES.—Esau Tarrant, Muskegon, Mich.

I claim the roller, E, hung in the pivoted frame, S, made adjustable by means of the elastic, H, in combination with the rollers, D, having sharp points or teeth, d', substantially as described, for the purpose specified.

68,014.—PUMPS—C. Verniand and D. J. Lucie, Quincy, Ill.

I claim the cylinder heads, D, constructed as described, provided with the projecting inclined flange, g, upon their upper sides, fitting over the upper side of the cylinder, A, the latter provided with corresponding inclined projecting inclined flange, f, upon its lower side, fitting into the lower part of the heads. D, all arranged as described, whereby the heads, D, are prevented from having any vertical movement independent of the cylinders, as herein shown and described.

68,015.—MACHINERY FOR PROPELING STEAM CARRIAGES.—Elijah Ware, Bayonne, N. J.

I claim, 1st, The combination of gear wheels, C E Y G, arranged substantially as herein described, for the purpose specified.

2d, I claim the running wheel, D, the brake wheel, K, the pulley, B, and the double ratchet, P, in combination with the gear wheels, substantially as described.

3d, The brake wheel, K, in combination with the gear wheels, as described.

68,016.—APPARATUS FOR PREPARING PEAT FOR FUEL.—Joshua Webster, Malden, Mass.

I claim in combination with the incline and its system of feeding scrapers and presser rolls, the filling, compressing, and discharging plungers arranged to operate substantially as set forth.

Also, the arrangement of the mechanism for intermittently bringing the respective filled and empty molds into position under the respective filling, compressing, and discharging plungers, substantially as shown and described

68,017.—WAGON WHEEL.—S. B. Welton, Waterbury, Conn.

I claim the box, B, provided with a spiral groove upon the outer side and adjustably secured in place in the hub, E, by the set screws, C and D, substantially as herein shown and described and for the purposes set forth.

68,018.—MUSKETO AND FLY NET.—Nathan Weston, Jr., West Newton, Mass.

I claim the combination and arrangement of the cord and the series of buttons or knobs, or their equivalents, with the window frame and the curtain applied thereto, substantially as specified.

68,019.—FRUIT BOX.—James White, Cleveland, O.

I claim the movable bottom, B, in combination with the strips, D, and box, substantially as and for the purpose set forth.

68,020.—WOOD TURNING LATHE.—John Wilson and R. Hughes, Boston, Mass.

We claim feeding the stock automatically and intermittently forward into position for the action of the cutter or cutters and holding the same stationary during the cutting operation, by mechanism substantially as set forth.

We also claim in combination with automatic intermittent feed mechanism substantially as described, mechanism substantially as described for automatically bringing up the cutters into operation upon the stock and for carrying them back after each operation.

Also the feed mechanism, cutting mechanism and sawing-off mechanism, when arranged substantially as set forth, to operate automatically and in succession.

68,021.—ROCKING CHAIR.—Daniel Witt, Hubbardston, Mass.

1st, I claim the arrangement of the seat, B, the side pieces, b b, pivoted on the base, A, and the spiral springs, c c, to give the seat a regular rocking or oscillating motion, substantially as herein described.

2d, The segment racks, e e, and spring dogs, g g, in combination with the back, C, seat, B, shifting lever, K, and block, H, substantially as described for the purpose specified.

3d, The shifting lever, K, and block, h, in combination with the seat, B, arranged and operating as and for the purpose specified.

68,022.—SASH BRUSH.—John B. Wood, Lansingburg, N. Y.

I claim the metallic packing, C, in combination with the ferrule, B, bristiles A, tapering metallic handle, D, with its open end, E, resting upon back, C, in the ferrule, B, as herein set forth for the purpose specified.

68,023.—BEDSTEAD.—B. F. Woodside, Atlanta, Ga.

I claim, 1st, The slat frames, G, hinged to the end rails, F, in such a manner as to be each folded vertically against the head and foot boards, and when turned to rest upon the pins, H, in the hinged side rails, E, thereby holding them spread and the bedstead in position, as herein set forth for the purpose specified.

2d, The sections e1 and e4, of the side rails, E, provided with holes for the reception of the pins, H, upon the sections, e2 e3, when folded together, whereby the bedstead is folded more compactly and vertical movement of the sections permitted, as herein set forth for the purpose specified.

68,024.—FLATIRON HEATER.—John H. Yates, Batavia, N. Y.

I claim, 1st, the construction and arrangement of the base, A, with or without the grate, B, upper pyramidal section, C, resting upon the base, A, and provided with slotted swinging doors, b, and partition, a, the hollow deflector, D, within the base, A, and section, C, forming flues between the ribs, a a, and inclined bottoms of the flat iron compartments, as herein set forth for the purpose specified.

2d, The close flat iron heater when constructed as described for being adapted to fit into the pot holes of a stove, substantially as described for the purpose specified.

3d, The combination and arrangement of the base, A, whose upper edge is adapted to support the flat iron in combination with the inclined flat iron compartments formed in the section, C, and provided with the slotted swinging cover, b, as herein set forth for the purpose specified

68,025.—LIQUID METER.—R. W. Young, Richmond, Va.

I claim, 1st, The weighted rod, I, and arm, K, in combination with the valve, C, beam, E, and floats, G G, substantially as and for the purposes set forth.

2d, The connections, h h', between the valves, H H', and float rods, F F' to actuate the former by the latter but permit independent motion.

68,026.—COMBINED PLANTER AND CULTIVATOR.—Jesse Adams, Clarksville, Texas.

I claim, 1st, The agitating and distributing attachment above described consisting of the perforated bottom of the box, G, in combination with the valve, a, lever, c, and pins, t t, on the wheel, W, all constructed and operat-

© 1867 SCIENTIFIC AMERICAN, INC.

ing in combination with each other, substantially in the manner and for the purpose specified.

2d, The combined planter and cultivator above described, constructed and operated, substantially as set forth.

REISSUES.

2,735.—FIRE ESCAPE.—American Fire Escape & Fireman's Ladder Company, New York City, assignees of Robert Watt. Patented June 20, 1865.

1st. I claim the apparatus composed of a divided case, A and g, composed of two sides of the ladder and hinged together by a series of rounds or steps, h h, and secured substantially as, and for the purposes herein set forth, the whole forming a fire escape ladder.

2d, The fastening substantially as herein described whereby the two segments forming the sides of the ladder are held securely together and locked against improper interference for the purposes set forth.

2,736.—BED BOTTOM.—A. S. Babbit, Keeseville, N. Y. Patented June 9, 1867.

I claim the block, A, with its ears, a a, and shoulders, x x, when constructed substantially as described and used for the purposes set forth.

2,737.—MACHINE FOR AFFIXING POST OFFICE STAMPS TO LETTERS.—R. Hoe & Company, New York City, assignees by mesne assignments of George K. Snow. Patented May 18, 1858.

1st, We claim the combination of the following elements, namely, a feeding mechanism to advance the strip of stamps or labels, a shearing or cutting mechanism to separate the stamps or labels, a platen to affix the stamps or labels, and a bed or equivalent therefor to support the article being stamped or labeled, constructed and operating substantially as described and for the purpose specified.

2d, The feeding mechanism, the platen, the shear or shears arranged with respect to the lever, and the bed or equivalent therefor substantially as specified, whereby by the reciprocating motion of the lever results will take place substantially as set forth.

3d, The combination and arrangement in a single instrument of the lever, C, the platen, H, and a shear or cutting edge, d, substantially as described and for the purposes set forth.

2,738.—METHOD OF HANGING DOORS.—George W. Holly, Low Moor, Iowa. Patented Oct 16, 1866.

I claim the arms, f f, and rods, e e, arranged and operating relatively with the bars, C F, and door or gate, A, substantially as described and for the purpose specified.

2,739.—OPERATING ORDNANCE.—Charles Perley, New York City. Patented Dec. 12, 1865.

1st, I claim the mode herein specified of elevating a gun or mortar from behind a breastwork or protection previous to its discharge and the lowering of the same previous to loading by a hydraulic ram and cylinder as specified.

2d, I claim a plunger and chamber from which there is an opening to form a gradual recoil check for ordnance by the escape of the fluid or liquid contained in such chamber.

3d, I claim projecting the gun forward by the pressure of a liquid upon a ram or plunger, substantially as specified.

4th, I claim adjusting or sighting a gun by means of pressure upon a ram or plunger in a chamber, substantially as specified.

5th, I claim elevating the charge or projectile by pressure acting upon a ram or plunger substantially as specified

6th, I claim connecting the chamber in which the recoil plunger acts with the cylinder sustaining the gun, substantially as specified, so that the pressure in the latter shall force the gun forward as set forth.

7th, I claim supplying through the sustaining ram, d, the liquid or fluid that acts by its pressure to project the ram or to adjust or sight the same substantially as set forth.

2,740.—FIRE PLACE.—Albert J. Redway, Cincinnati, Ohio. Patented May 7, 1867.

1st, I claim in the described combination with an open front stove or fire place, I claim the crown, C, (whether flat, truncated or arched) having the side flues, D D', and dividing strip or strips, G G', substantially as set forth.

2d, Surrounding the fire chamber of a grate or stove with the arched crown, C, which extends from the back of the fire chamber, and is provided with side flues, D D', all arranged and operating in the manner herein described and set forth.

3d, In combination with the crown, C, and side flues, D D', I claim the flue strips, G G,' and abutment, H H, for the purpose specified.

2,741.—PREPARATION OF ROOFING FABRIC.—Alfred Robinson, New York City. Patented June 20, 1865.

1st, I claim the method of coating a sheet or sheets of felt or other material with asphalt or other cement in a soft or plastic state, by applying such material to one side of the sheet while the other side is supported by a roller or moving surface, substantially as set forth.

2d, Uniting two or more thicknesses of felt or paper to form a roofing material by means of asphalt or other cement introduced between such thicknesses while supported and moved by a roller, substantially as set forth.

2,742.—SPRING MATTRESS.—R. Stilwell and A. D. Farrell, New York City, assignee of R. Stilwell. Patented September 20, 1864.

1st, We claim hinging together the sections containing the springs substantially as herein shown and described, so that the folded horizontal sections thereof shall have a separation of about twice the thickness of the mattress, all as set forth.

2d, The combination with the mattress at the folds thereof, and with the horizontal section substantially as and for the purpose herein shown and described.

3d, The catching lips, i, in combination with the hinges substantially as herein shown and and described.

2,743.—HARVESTER REELS.—William N. Whiteley, Springfield, Ohio, assignee of John S. Troxel. Patented May 11, 1858. Division B.

1st. I claim supporting the blades of overhanging reels from the head or plate on the end of the short shaft at the inner end of the reel by means of the straight arms, I, and oblique arms, K, substantially as set forth.

2d, The head or plate, J, or equivalent for the purpose of connecting the arms, K K, which supports the blades to the short shaft, at the inner end of the reel, substantially as and for the purpose set forth.

3d. The adjustable head or plate, J, substantially as and for the purpose specified.

4th, The head, J, constructed with the slots, N, in combination with the clamping bolt, M, and permanent arm, I, substantially for the purpose set forth.

2,744.—CLOTHES HOOK.—H. M. Whitmarsh, Abington, and Silas, S. Putnam, Dorchester, Mass. Patented Jan. 29, 1867.

We claim a pivoted hook, C, with its slot or opening, e, arranged that it may be closed up and thus occupy less space substantially as described.

We also claim in combination with the above, a plate or bracket, A, substantially as and for the purpose set forth

2,745.—SEWING MACHINE.—Christopher Hodgkins, Marlboro, N. H. Patented Aug. 20, 1861. Division A.

1st, I claim the combination of the jounted arcs, K L, fitted between the feed ring, J, and the supporting block, M, the lever, N, and its cam, f, and the screw, i, the whole arranged substantially as described in relation to each other and to the cam, O, on the feed shaft, G, and operating as set forth.

2d, So arranging and applying the rotary looper in combination with an eye pointed needle for working the chain stitch, that the point of the looper enters the loop of needle thread while below the axis of rotation, substantially as herein described. or in other words, while on the opposite side of said axis to that in which the cloth is situated.

2,746.—SEWING MACLINE.—Christopher Hodgkins, Marlboro, N. H. Patented Aug. 20, 1861. Division B.

I claim the internal gear, H, in combination with the pinion. E, and actuating a reciprocating needle, and the pinion, G', for operating a looper or instrument for forming stitches in a sewing machine, substantially as described and for the purposes specified.

2,747.—RAILROAD CAR BRAKE.—J. W. Latcher and Wm. J. Powell, Amsterdam, N. Y. Patented Dec. 27, 1864.

We claim suspending or hanging railroad car brakes by means of suitable sleeves secured to the cross beams of the brake, and so fitted as to slide forward and backward on appropriate guide ways secured to the truck, substantially as and for the purposes set forth.

2,748.—WOODEN PAVEMENT.—Samuel Nicolson, Boston, Mass. Patented Aug. 8, 1854. Reissued Dec. 1, 1863.

1st, I claim placing a continuous foundation or support as above described directly upon the roadway, then arranging thereon a series of blocks having parallel sides, endwise in rows, so as to leave a continuous narrow groove or channelway between each row, and then filling said grooves or channelways with broken stone, gravel, and tar, or other like materials.

2d, I claim the formation of a pavement by laying a foundation directly upon the roadway, substantially as described, and then employing two sets of blocks, one a principal set of blocks, that shall form the wooden surface of the pavement when completed, and an auxiliary set of blocks or strips of board, which shall form no part of the surface of the pavement, but determine the width of the groove between the principal blocks, and also the filling of said groove, when so formed between the principal blocks, with broken stone, gravel, and tar, or other like material.

3d, Placing a continuous foundation or support as above described, directly upon the roadway, and then arranging thereon a series of blocks having parallel sides, endwise in a checkered manner, so as to leave a series of checkered spaces or cavities between said blocks, and then filling said checkered cavities with broken stone, gravel, and tar, or other like material.

4th, I claim the production of a pavement by laying a foundation directly upon the roadway, substantially as above described, and then employing two sets of blocks, viz., one a principal set of block, that shall form the wooden surface of the pavement, and an auxiliary set of blocks that shall form no part of the wooden surface of the pavement, but determine the dimensions of the tesselated cavities between the principal blocks, and then filling said tesselated cavities with broken stone, gravel, and tar, or other like material.

2,749.—PICKER STAFF MOTION FOR LOOMS.—The Amoskeag Manufacturing Company of Manchester, N. H., assignees of Nehemiah S. Bean. Patented Jan. 22, 1861. Reissued May 28, 1867.

We claim the improved arrangement of the rocker, b, within the link, c, and on the support piece, e.

Also the arrangement of the spring, f, with the support piece, e, the link, c, and the rocker, b.

Also the arrangement of the ears, g, with the link, c, and the rocker, b, the whole being substantially as specified.

2,750.—BRUSH HOLDER.—Bernard Morahan, Brooklyn, N. Y. Patented July 9, 1867.

I claim the frame, A, or its equivalent, in combination with a hinged or pivoted jaw, or the equivalent thereof, so arranged as to expand or contract as the size of the brush may require, for the purpose herein shown and described,

2,751.—ELEVATOR.—N. D. Hinman, Stepney Depot, Conn. Patented Nov. 29, 1864.

I claim the bars, J J L L, pivoted in the car, A, as shown, and the bars, J J, connected at one end by a cross piece, k, in combination with the button, G, on the chain, F, and the pins, e, on the inclined ways, M, all arranged substantially as and for the purpose herein set forth.

I further claim the bent pawl, H, arranged to operate in connection with the chain, F, and pulley, D, substantially as and for the purpose set forth.

2,752.—MODE OF TRAINING HOPS, ETC.—Levi H. Whitney, Vallejo, Cal. Patented Dec. 4, 1866.

1st, I claim the herein-described mode of training hop vines, etc., in such manner as to lead them up wires diverging from each hill, and then horizontally across the space to the next row opposite, upon wires retained separate at any desirable width or distance from each other over the whole surface of the plantation, substantially as set forth.

2d, The shackles or device herein described for securing the strings or cords, when constructed and used in the manner described.

3d, Constructing the shackles, b b b, with longer arms than those of c c c, to allow them to drop lower than the latter, to which the upper ends of the cords are attached.

4th. The device constructed and arranged as described, for securing the lower ends of the cords over the hills of vines, for the purpose described.

DESIGNS.

2,751.—TRADE MARK.—George Brett, North Easton, Mass.

2,752.—PLATES OF A STOVE.—David Hathaway (assignor to Fuller, Warren & Co.), Troy, N. Y.

2,753.—INK BOTTLE.—B. P. Holmes, Philadelphia, Pa.

2,754 to 2,765, inclusive.—CARPET PATTERN.—E. J. Ney (assignor to Lowell Manufacturing Company), Lowell, Mass. Twelve Patents.

2,766.—HORSE BRUSH.—A. H. Smith, Wm. W. Clark, and Geo. F. Starbuck, New York city.

2,767.—PAPER BAG.—Samuel W. Valentine, Bristol, Conn.

PENDING APPLICATIONS FOR REISSUES.

Application has been made to the Commissioner of Patents for the Reissue of the following Patents, with new claims as subjoined. Parties who desire to oppose the grant of any of these reissues should immediately address MUNN & CO., *37 Park Row, N. Y.*

46,075.—TOOL FOR PAINTING PAILS.—Jonathan Carter, Winchendon, Mass. Patented Jan. 31, 1865. Application for reissue received and filed Aug. 1, 1867.

1st, I claim an elastic printing surface adapted and corresponding to the surface and taper of the pail, tub, or other similar articles to be printed or otherwise ornamented, and operating in the manner and for the purpose set forth and described.

2d, Constructing said bed of elastic material in the curved form shown, to be applied as described, whether said bed be arranged in a series of distinct designs or in one general design, for the purpose set forth.

3d, The conical die or print roll when constructed in the manner and for the purpose substantially as above set forth and described.

14,201.—LANTERN.—Francis Morandi, Boston, Mass. Patented Feb. 5, 1856. Application for reissue received and filed Aug. 2, 1867.

1st, The funnel, D, applied to the lantern in the manner and for the purpose substantially as herein set forth.

2d, I further claim the opening in the side of the lantern covered by a sliding door, C, substantially as and for the purpose set forth.

26,401.—MODE OF APPLYING SULPHUROUS ACID GAS IN THE DEFECATION OF CANE JUICES.—Nancy Poindexter Brashear, Pattersonville, La. Patented Dec. 6, 1859. Application for reissue received and filed Aug. 3, 1867.

1st, The use of the fumes of burning sulphur, or sulphurous acid gas, in the treatment of juices containing saccharine matter, substantially as described.

2d, Subjecting sugar cane juice, or other saccharine liquid, to the direct action of the fumes of burning sulphur, such liquid being employed in a diffused state, or in such manner treated that it will be thoroughly impregnated with the fumes of sulphur, substantially as described.

34,984.—COAL OIL LAMP.—Joseph Ridge, Richmond, Ind. Division A. Patented April 15, 1862. Application for reissue received and filed Aug. 3, 1867.

1st, The use of transparent material between the base of the deflector and base of the burner, by which the advantages are obtained as herein described.

2d, The combination and arrangement of the base, B, of the burner, the transparent inclosure, M, the deflector, D, and chimney, C, substantially as set forth and for the purposes described.

34,984.—COAL OIL LAMP.—Joseph Ridge, Richmond, Ind. Division B. Patented April 15, 1862. Application for reissue received and filed Aug. 3, 1867.

The within described arrangement of the deflector having an enlarged slot, with reference to and in combination with a chimney constructed as described.

22,436.—FRUIT CAN.—Wm. W. Lyman, West Meriden, Conn. Patented Dec. 28, 1858. Application for reissue received and filed Aug. 5, 1867.

I claim compressing the cover and jar together against the packing ring, when said packing ring is arranged between the lower edge of the flange of the cover and a properly formed seat on the neck or body of a jar, substantially as and for the purpose described.

41,097.—PUTTING UP POWDERS, ETC.—Henry Sawyer, Roxbury, Mass. Patented Jan. 5, 1864. Application for reissue received and filed Aug. 7, 1867.

What I claim as a new article of manufacture is a package or case which, when made with distributing holes and filled, is cemented by the wax or wafer, e, as set forth.

41,070.—STRAW CUTTER.—F. B. Hunt, Richmond, Ind. Patented Jan. 5, 1864. Reissue No. 2,368, dated Oct. 2, 1866. Application for reissue received and filed Aug. 8, 1867

1st, I claim the bar, x, cast in one piece with the bearings, b b, of cutter shaft, c, and extending across from one to the other, substantially as shown.

2d, I claim a horizontally sliding adjustable bar, against which a rotary knife cuts, in combination with vertical screws or bolts attached to or passing through it, by which it is held down upon its bearings.

3d, I claim a rigid supporting bar, when used as a support for the horizontally sliding adjustable cutter bar, E, as and for the purpose shown and described.

4th, I claim the bearings, b b, when made in halves in combination with a horizontally sliding adjustable bar against which a rotary knife cuts.

5th, I claim attaching the plates, w, and the bearings, b b, to the bar, x, for the purpose of forming a framing to support and attach the working parts of the machine, whether the bar, x, is cast in one piece with the bearings, b b, or whether the bar, x, is otherwise attached.

6th, I claim connecting the feed rollers, G and H, by means of the pinions, a' b' d' and e', the pinions. b' and d', being placed on studs on the swinging plate, c', attached to the shaft, n; the pinions, d' and e', being kept in gear by the link, f, or its equivalent.

7th, I claim the swinging plate, c', connected to the shaft, n, and carrying the pinions, b' and d', substantially as and for the purpose shown and set forth.

8th, I claim mounting the upper feed roller, H, in a frame with slings extending below the lower feed roller, and acted upon by a spring or its equivalent, substantially as shown and for the purpose set forth.

9th, I claim the hooked slings, q q, in combination with the yielding feed roller, H, and spring, I, or its equivalent, whereby the said feed roller, H, is limited in its upward movement, as set forth.

10th, I claim hanging the upper feed roller, H, in slings attached to a spring or its equivalent, said roller moving in slots, v v, in combination with a revolving knife and a horizontally adjustable bar against which the knife cuts.

11th, I claim the hubs or bearing, u' u', attached to the slings, q q, and surrounding the shaft, p, of the feed roller, H, said hubs moving in slots, v v, in plate, w, and relieving the shaft from friction against the plates, as set forth.

12th, I claim the guide board or plate, u, connected to and moving with the frame, t, of the upper feed roller, H, and extending downward at the back of the said roller to near a level with its axis, substantially as and for purpose set forth.

13th, I claim the slots, v v, in plates, w, when combined with a rotary knife D, and a horizontally sliding adjustable bar against which the knife cuts, for the purpose shown and set forth.

14th, I claim the slots, v v, in the plates, w, when made concentric with shaft, c, in combination with pinions, a b d and e, said pinions connecting feed rollers, H and G, so that the adjustable roller can move up and down concentric with shaft, C, and the pinions remain in gear, substantially as set forth.

15th, I claim a feed roller whose shaft moves up and down in combination with a horizontally sliding adjustable bar against which the knife cuts.

16th, In combination with the bar, x, and adjustable bar, E, I claim a revolving knife, D, with its axis placed above the plade of the adjustable cutter bar, E, to act with a slanting and shearing cut, substantially as set forth.

17th, I claim the counterbalances' c" c", when combined with arms, e e, and e single rotary knife, for the purpose shown and described.

18th, I claim combining and revolving cutter knife, D, with the fly wheel, E', in such manner that when the knife is in rapid motion and meets with an obstruction, the knife may be suddenly arrested, and the fly wheel continue to revolve for a limited period of time and expend its momentum independently of the knife, thereby preserving the knife and other parts of the machine from injury by the sudden stoppage of the knife.

119, whole No. 31,123.—SEEDING MACHINE.—Adam R. Reese, Phillipsburg, N. J., assignee of George W. Lee and Adam R. Reese. Patented Jan. 15, 1861. Application for reissue received and filed Aug. 8, 1867.

1st, I claim the lifter handle that raises the seed tubes out of the ground, in combination with a mechanism or device that throws the feed out of gear by the one movement of the said lifter handle.

2d, In combination with a grain drill tube and draw bar, a brace to support the tube, fastened at its lower end to the tube, and its upper end embracing the draw bar, and a wooden pin which holds the upper end in proper position, and which will allow the brace to slide back on the bar when the tube strikes an obstruction, for the purpose set forth.

3d, In combination with a grain drill tube, a brace for maintaining the tube in its proper working position, supported and kept in place at its upper end by means of a wooden pin, for the purpose set forth.

4th, The feed slide of a grain drill made of two bars, the one sliding in recesses of the grain stirrups while the other is adjustable in relation thereto in such manner as to maintain the parallelism of said bars, for the purpose set forth.

11,967.—SEED PLANTER.—Adam R. Reese, Phillipsburg, N. J., assignee of George W Lee, Patented Nov. 21, 1854. Application for reissue received and filed Aug. 8, 1867.

1st, I claim in combination with the seed box of a grain drill, cast iron ends for closing and supporting the ends of said box.

2d, The cast iron ends of the seed box of a grain drill, provided with flanges formed thereon fitting and supporting the ends of the front and rear boards, as described.

3d, In combination with the seed box of a grain drill, cast iron ends provided with feet for supporting the box on the main frame.

4th, The scores, o o, or their equivalent, at the extremities of the holes, C, in the disks, M, in combination with the gradual narrowing of the holes toward their extremities, so as to save the grain from being cut, substantially as described.

52,130.—SPOKE MACHINE.—R. H. Boynton, Oshkosh, Wis. Patented Jan. 23, 1866. Application for reissue received and filed Aug. 9, 1867.

1st, I claim the feed pulley. D, feed lever, v', friction pinion, g, friction pulley, E, pinion, e', and gear wheel, f, or their equivalents, when arranged relatively to each other and to the pulley or drum, H, and revolving pattern, S, and triper pin, C, as and for the purposes set forth.

2d, I claim the taper adjusting connection, n. and auxiliary lever, m", when arranged relatively to each other and to the lever, m', and arms, t t, as described, or in any manner equivalent, as and for the purposes set forth.

3d, I claim the revolving pattern, S, lever, m', bent arms, t t, spring, 6, or their equivalents in effect, when arranged relatively to each other and to the cutter heads, u u, and rotating feed carriage beds, as and for the purposes set forth.

4th, I claim the revolving wiper pin, C, lever, h, and jointed standard, i2, or their mechanical equivalents in effect, when arranged relatively to each other and to the cutter heads, u u, and rotating feed carriage beds, as and for the purposes set forth.

5th, I claim an adjustable automatic actuating of the revolving cutter heads provided with suitable cutter knives in a perpendicular, together with a reciprocating lateral motion in combination with the revolving motion thereof, and arranged relatively to variformed patterns, as and for the purposes set forth

6th, I claim the employment of a number of feed carriage beds, connected together to rotate and form a continuous feed, when arranged relatively to and used in combination with reciprocating revolving cutters, substantially as described, or in any manner equivalent in effect, for the purposes set forth.

58,327.—ENVELOPE MACHINE.—H. E. Berlin and George H. Jones, New York city, assignees of Thomas V. Waymoth. Patented Sept. 25, 1866. Application for reissue received and filed Aug. 12, 1867.

1st, We claim gumming the seal flaps of the blanks for envelopes at or about the same time with the lower or end flaps, after the blanks are placed in the machine and before they are folded, by mechanism substantially such as described, or any other suitable mechanism to produce the same effect, for the purposes set forth.

2d, The arrangement of a curved guide, T, in combination with the table supporting the blanks, substantially as and for the purposes set forth.

3d, Causing the seal flap, while being folded, to bear on one or more of the other folding wings, or on parts or projections of said wings, or any device or mechanism interposed between the seal and other flaps and producing the same effect, substantially as and for the purposes set forth.

4th, The combination with mechanism adapted to gum the seal and other flaps of envelope blanks, of a folding mechanism so arranged and operating as to prevent the seal flap being brought in contact with the other flaps or parts of the blank and adhering thereto,

5th, The protecting lips, f*, in combination with the folding wings, constructed and operating substantially as and for the purposes set forth.

6th, The raised or projecting surface at or near the edge of the wing which folds the lower flap of the blank, substantially as and for the purposes set forth.

7th, The endless apron, Q, with its radiating arms, in combination with a suitable gumming and folding mechanism, constructed and operating substantially as and for the purposes set forth.

8th, Passing the endless apron, Q, at its receiving end, over a square or polygonal shaft, substantially as and for the purposes set forth.

9th, In combination with the endless apron, Q, the rail, o', or its equivalent, substantially as and for the purposes set forth.

10th, The combination with a suitable mechanism for gumming the flaps of envelopes, and folding the envelope blanks, of an endless apron as described, or any equivalent device or mechanism for receiving the envelopes after they are folded, and moving or supporting the same without compression until the gum on the seal flaps is dried.

11th, In combination with the endless apron, Q, or its equivalent, the receiving box, R, and follower, S, constructed and operating substantially as and for the purpose set forth.

12th, The lower arm, O, in combination with the carrying platform, N, and a suitable die inserted in or attached to said lever, or to the platform, or to both, substantially as and for the purposes set forth.

13th, The arrangement of dies, S, on the creasing plunger, and on the folding table, or on either, substantially as and for the purpose set forth.

14th, The types, u, arranged in an arm and operating in combination with the folding table and creasing plunger, substantially as and for the purposes set forth.

61,576.—HAY KNIFE.—Philo O. Soper, San Francisco, Cal. Patented Jan. 29, 1867. Application for reissue received and filed Aug. 13, 1867.

1st, I claim the construction of the blade, B, substantially as described.

2d, The bearing of the shank, C, in connection with the angle given to the edge of the blade, B, substantially as and for the purpose described.

3d, The point, A, substantially as and for the purposes above described.

Advertisements.

RATES OF ADVERTISING.

Back Page.....75 *cents a line.*
Back Page, for engravings.....$1.00 *a line.*
Inside Page.....40 *cents a line.*
Inside Page, for engravings.....60 *cents a line.*

THE SUBSCRIBER Wishes to dispose of the Entire, or State and County Rights, for his Patent Mosquito Bar for windows. Also, for his Patent Miter Box. For circular, address ASA F. TARR,
1* Rockport, Essex county, Mass.

STEAM ENGINES—Superior in Construction, with Sault's Patent Frictionless Slide Valve, the most complete and economical Engine for Manufacturing purposes. Address
10 13] M. & T. SAULT, New Haven, Conn.

BAIRD'S NEW CATALOGUE OF PRACTICAL AND SCIENTIFIC BOOKS, Revised and Completed to June 1, 1867, will be sent, free of postage, to any one who will favor me with his address.
HENRY CAREY BAIRD,
Industrial Publisher,
406 Walnut street,
Philadelphia.

OIL! OIL!! OIL!!!
FIRST PREMIUM.....PARIS, 1867.
EXPOSITION UNIVERSELLE!
PEASE'S IMPROVED OILS!
Acknowledged the Best in the World! The Highest Award over all others!
Grand Silver Medal and Diploma!
The **Only One** to the United States awarded to
F. S. PEASE,
For the Greatest Excellence in Oils for Lubricating and Burning.

London,.....1862.
WORLD'S FAIR—TWO PRIZE MEDALS
Awarded to **F. S. PEASE** for Improved Engine, Signal, Lard, and Premium Petroleum, as the **Best made!**

These Improved Oils cost no more than many of the common oils in market, while they are endorsed by the greatest experience and highest authority in the United States and Europe, and offered to the public upon the most thorough, reliable, and practical tests as the Best Oils made for
Railroads, Steamers, and for Machinery and Burning.
F. S. PEASE, Oil Manufacturer,
Nos. 61 and 63 Main street, Buffalo, N. Y.
N B.—Reliable orders filled for any part of the world.
10 tf

STEERE'S SELF-LUBRICATING Spindle BOLSTER.—Patented Jan. 21, 1862, and Nov. 8, 1864. There is now more than two hundred and fifty thousand of these Bolsters in use; and the best of reference can be given as to the merits and value of the same. All Manufacturers that use Spinning Machinery will find it greatly to their advantage to apply these Bolsters. For full particulars and circular address ERASTUS N. STEERE,
10 tf] No. 10 Market Square, Providence, R. I.

BAIRD'S NEW CATALOGUE OF PRACTICAL AND SCIENTIFIC BOOKS, Revised and Completed to June 1, 1867, will be sent, free of postage, to any one who will favor me with his address.
HENRY CAREY BAIRD,
Industrial Publisher,
406 Walnut street,
Philadelphia

WANTED.—A Young American of good character and education wants to learn Tinsmithing in all its branches. To any one within three hundred miles I will give further particulars.
E. E. NORTON, Poughkeepsie, N. Y.

PAPER-BAG MACHINES, and STATE Rights to use, for sale by B. S. BINNEY,
10 18] 64 Kilby st., Boston, Mass.

WANTED—A Planer that will plane 15 feet long by 8 feet square. Would purchase a second-hand planer if suited. Address
10 3] COBB, STRIBLING & CO., Madison, Ind.

BAIRD'S NEW CATALOGUE OF PRACTICAL AND SCIENTIFIC BOOKS, Revised and Completed to June 1, 1867, will be sent, free of postage, to any one who will favor me with his address.
HENRY CAREY BAIRD,
Industrial Publisher,
406 Walnut street,
Philadelphia.

A. FESQUET, Chemist and Engineer, Construction of Chemical Works, Assays and Analyses, Advice, Reports, etc., on the Arts and Manufactures, 1322 Marshall street, Philadelpaia, Pa. 10 2*

A Mechanical Draftsman of experience desires employment. Unquestionable references. Address "MECHANICAL DRAFTSMAN," Attica, N. Y.

MOLDING CUTTERS MADE to Order—Send for circular to WM. H. BROWN,
10 10] 44 Exchange st., Worcester, Mass.

A MESSIEURS LES INVENTEURS—Avis important. Les inventeurs non familiers avec la langue Anglaise, et qui préféreraient nous communiquer leurs inventions en Français peuvent nous addresser dans leur langue natale. Envoyez nous un dessin et une description concise pour notre examen. Toutes communications serons reçus en confidence.
MUNN & CO.,
Scientific American Office, No. 37 Park Row, New York.

© 1867 SCIENTIFIC AMERICAN, INC.

DREYFUS' PATENT

SELF-ACTING LUBRICATOR.

IMPORTANT TO ENGINEERS.

No More Uncertainty about your Oil Cups Being Filled.

THE ADVANTAGES To be Derived from Using Dreyfus' Lubricator, are:—It is so constructed as only to oil the bearings when the shaft is in motion. It effects a saving in oil of 50 per cent. Oil holes can never become clogged or stopped up on account of the continual motion of the self-acting feeder, which causes the oil to drop on the journal shaft in large or small quantities. Descriptive circulars furnished on application at 33 Nassau street, New York. Agents wanted. 9 1os 3is

FOR SALE—A Gray & Wood Dimension Planing Machine, very cheap for cash, all in good order. Inquire of HUTCHINSON & LAURENCE. 10 2] No. 8 Dey st., New York.

BAIRD'S NEW CATALOGUE OF PRACTICAL AND SCIENTIFIC BOOKS, Revised and Completed to June 1, 1867, will be sent, free of postage, to any one who will favor me with his address. HENRY CAREY BAIRD, Industrial Publisher, 406 Walnut street, Philadelphia.

TO INVENTORS OR PATENTEES.—If you have a machine for either agricultural, domestic, or other purposes, likely to suit the Republics on the river Platte, and are disposed, by my attempting to introduce it there, to send one or more machines out for sale, apply to the Consulate of the Argentine Republic, 128 Pearl street, New York. 8 4*

CASTING IN STEEL—To Pattern—Homogeneous and Solid—from 150 lbs. upward, with five times the strength of iron. Forgings in Cast Steel made by "The wm. Butcher Steel Works," Philadelphia. Selling Agent, PHILIP S. JUSTICE. 9 4] 14 N. 5th street, Philadelphia, or 42 Cliff st., N. Y.

WANTED—Ladies and Gentlemen everywhere, in a business that will pay $5 to $20 per day; no book, patent right, or medical humbug, but a standard article of merit, wanted by everybody, and sold at one third the usual price, with 200 per cent profit to our agents. Samples and circulars sent by mail for 25 cents. 9 4*.] WHITNEY & SON, 6 Tremont st., Boston, Mass.

$500.000 CAN BE MADE BY SECURING a half-interest in four inventions, viz:—A Currycomb, a Steam Engine, a Cultivator and Gang Plow combined, and a machine to gather corn. There is no humbug in this, and those who bite first will make the fortune. Apply to 9 2 JOHN H. BERRINGER, JR., Hillsboro, Ill.

SPICE CAN AND BLACKING BOX Makers, send for circular of Painter's Patent Riveting device, dispensing with solder. Great economy, 30 Machines in use. W. PAINTER & CO., 9 8] 45 Holliday street, Baltimore.

MANUFACTURERS OF GENERAL Machinery, etc., please send circulars, terms, etc., to the subscriber. Best references given. Am a Machinist and Founderyman of 25 years' experience. C. KRATZ, South-western Agricultural Impl't and general Machinery Depot, Manufacturers' Agency and Machine Works, Evansville, Ind. 8 3*

MILL-STONE DRESSING DIAMONDS Set in Patent Protector and Guide. Sold by JOHN DICKINSON, Patentee and Sole Manufacturer, and Importer of Diamonds for all mechanical purposes; also, Manufacturer of GLAZIERS' DIAMONDS, No. 64 Nassau street, New York City. Old diamonds reset. N. B.—Send postage stamp for descriptive circular of the Dresser. 9 12

LAW'S PATENT SHINGLE and HEADING MACHINE—The simplest and best in use. Steam Cutters. Jointers, Equalizers, etc. Send for illustrated circular. Address TREVOR & CO., 10 5*] Lockport, N. Y.

GEORGE M. DANFORTH & CO.'S

INVENTORS' EXCHANGE Having been removed to the spacious store No. 512 Broadway, opposite St. Nicholas Hotel, offers superior inducements to all parties having new improvements they desire to introduce by placing the same in our hands for proper exhibition and sale. Letters of inquiry must contain stamp. Refer, by permission, to Hon. Jonathan E. Field, Stockbridge, Mass; Hon. Joseph White, Williamstown, Mass; Hon. George L. Becker, St. Paul, Minnesota; Hon. Butler G. Noble, New York City; Hon. William A. Moore, Detroit, Mich.; Messrs. Scates Bates & Towsley, Chicago, Ill. 9 4*

A CO. is solicited in every State to invest in an Ironing Machine on royalty—the best thing out. Apply for circular, J. SPELMAN, No. 30 Warren st., N. Y.

ALL WORKS ON "THE WATER CURE," with prices. Illustrated Catalogue sent on receipt of two stamps, by S. R. WELLS, Publisher, No. 389 Broadway, New York. Agents wanted, 9 2

MORSE PATENT STRAIGHT-LIP INCREASE TWIST DRILL.—Sizes from 3-100 to 2 inches. Drills of extra length made to order with straight shanks, or tapered to fit any sockets, by Morse Twist Drill and Machine Company, S. A. MORSE, Supt., 9 tf] New Bedford, Mass.

WOOD-WORKING MACHINERY, The SUBSCRIBER is Agent in New York for J. A. Fay & Co., C. B. Rogers & Co., Ball & Williams, Richardson, Merriam & Co., H. B. Smith, Gray & Woods, Lane & Bodley, D. Doncaster, and all other manufacturers of Wood-working Machines. S. C. HILLS, No. 12 Platt st. 1

PATENT SHINGLE, STAVE, AND Barrel Machinery, Comprising Shingle Mills, Heading Mills, Stave Cutters, Stave Jointers, Shingle and Heading Jointers, Heading Rounders and Planers, Equalizing and Cut-off Saws. Send for Illustrated List. FULLER & FORD, 9 tf] 282 and 284 Madison street, Chicago, Ill

FOR SALE—Very superior upright Drills, New Friction Feed, materials and workmanship first class. Send for cut 2 t BULLARD & PARSONS, Hartford, Conn.

GROVER & BAKER'S HIGHEST PREMIUM ELASTIC Stitch Sewing Machines, 495 Broadway, N. Y. 1 tf

JUST PUBLISHED—THE INVENTOR'S and MECHANIC'S GUIDE.—A new book upon Mechanics, Patents, and New Inventions. Containing the U. S. Patent Laws, Rules and Directions for doing business at the Patent Office; 112 diagrams of the best mechanical movements, with descriptions; the Condensing Steam Engine, with engraving and description; How to Invent; How to Obtain Patents; Hints upon the Value of Patents; How to sell Patents: Forms for Assignments; Information upon the Rights of Inventors, Assignees and Joint Owners; Instructions as to Interferences, Reissues, Extensions, Caveats, together with a great variety of useful information in regard to patents, new inventions and scientific subjects, with scientific tables, and many illustrations. 108 pages. This is a most valuable work. Price only 25 cents. Address MUNN & CO. 37 Park Row, N. Y.

BUERK'S WATCHMAN'S TIME DETECTOR.—Important for all large Corporations and Manufacturing concerns—capable of controlling with the utmost accuracy the motion of a watchman or patrolman, as the same reaches different stations of his beat. Send for a Circular. J. E. BUERK, P. O. Box 1,057, Boston, Mass.

N. B.—This detector is covered by two U. S. patents. Parties using or selling these instruments without authority from me will be dealt with according to law. 8 19*

FLOATING STEAM EXCAVATORS AT REDUCED PRICES. The undersigned is prepared to supply any number of these Excavators, built in the best manner, with different sizes of engines. Address GEO. TALLCOT, tf 7] Turbine Water Wheel Depot, 96 Liberty st., N. Y.

CAMDEN TUBE WORKS CO., Manufacturers of all sizes of WROUGHT-IRON WELDED TUBE AND STEAM GAS FITTERS AND TUBE MANUFACTURERS' TOOLS, viz: Peace's Improved Gas Pipe Screwing and Cutting-off Machines of various sizes for both Steam and Hand Power; No. 3, machine screws and cuts off from ⅛ to 2-inch pipe; No. 4, machine screws and cuts off from ⅛ to 4-inch pipe; No. 5, machine screws and cuts off from ⅛ to 6 inch pipe; also, screwing stocks, dies, taps, reamers, drills, ratchet drills, pipe cutters, pipe tongs, and pipe vises. No. 1, holds from ⅛ to 2 inch pipe, price $15; No. 2 holds from ⅛ to 4-inch pipe, price $22. Peace's patent pipe clamp which fits on an ordinary vise and holds from ⅛ to 2-inch pipe, price $5. Peace's patent screwing stocks, No. 1, stock and dies, screws, ¼ ⅜ ½ and ¾ pipe, price $10; No. 2, stock and dies, screws, 1 1¼ 1½ and 2-inch pipe, $20; No. 3, stock and dies, both screws and cuts off 2½ 3 3½ and 4, $50. Peace's patent adjustable pipe tongs which for strength and durability are warranted superior to anything of the kind in the market; No. 1 grips ¼ ⅜ ½ ¾ and 1-inch pipe and sockets, price $4; No. 2, grips 1 1¼ 1½ and 2-inch pipe and sockets, $7; No. 3 grips 2½ 3 3½ and 4-inch pipe and sockets, $14.

☞ Any of the above tools will be sent by express free of charge C. O. D. at above rates by addressing CAMDEN TUBE WORKS, 7 13*] Second and Stevens streets, Camden, N. J.

MACHINISTS' TOOLS,

Made by the LOWELL MACHINE SHOP. For sale by STEVENSON & PEIRSON, Agents, 8 4*] 48 Kilby street, Boston, Mass.

PRATT, WHITNEY & CO., Manufacturers of First-class Machinists' and Gun Tools, Engine Lathes, with Slate's Patent Taper Attachment, Stannard's Patent Hydraulic Engines for High Pressure and Special Machinery. Send for circulars, Hartford, Ct. 8 13*

MILLED MACHINE SCREWS.—Every variety of square or round-head milled and case hardened set or cap screws. Also, screws made to order. 8 4*] E. A. BAGLEY & CO., Worcester, Mass.

SHEET AND ROLL BRASS, BRASS AND COPPER WIRE, GERMAN SILVER, ETC., Manufactured by the THOMAS MANUFACTURING CO., Thomaston, Conn. Special attention to particular sizes and widths for Type Founders, Machinists, etc. 2 26*

WANTED—The Agency in New Orleans, La., on salary, of a Patent connected with Steam Boilers, or any machinery or invention for use in the South, by a man of scientific education and experience. Highest references. Address C. W. T., care of Curtis & Cobb, Boston, Mass. 8 5*

WANTED—Agents in every State to sell "Chase's Improved Dollar Microscope" and "Descriptive National Bank Note Detector," just out. Over 20,000 sold. $100 per month made clear. Sample, with book, sent by mail on receipt of $1. Call on or address O. N. CHASE, 81 Washington street, Boston, Mass., or Fowler & Wells, New York City. 5 tf

FOR ROCK-DIGGING AND WALL-Laying Machines, address G. L. SHELDON, 5 16*] Hartsville, Mass.

WHEELER & WILSON, 625 BROADway, N. Y.—Lock-stitch Sewing Machine and Buttonhole do. 1t

LE COUNT'S Patent Hollow Lathe Dogs,
8 Sizes, from ⅜ to 2 inches.....$8 00
12 Sizes, from ⅜ to 4 inches.....$17 30
Improved Machinists' Clamps, 5 sizes.....$11 00
Stout Boiler-makers' Clamps.....$ 4 00
All with Steel Screws, well fitted. Send for circular 24 13*] C. W. LE COUNT South Norwalk, Ct.

C. B. ROGERS & CO., Manufacturers of the most Improved Wood-working Machinery, Planers and Matchers, Molding, Mortising, Tenoning, and Resawing Machines, etc., Boardman's Patent Blind Staples Sates and Machinists' Tools. Wareroom 109 Liberty st. New York. Manufactory, Norwich, Ct. 2 13*

THE FUEL SAVING FURNACE CO., No. 205 BROADWAY, N. Y.

IMPORTANT TO MANUFACTURERS of Barrels and Shippers of Oil, Spirits, or Alcohol. Merrill's improved Tongued, Grooved and Cemented joint barrels have prooved to be the only reliable and perfectly tight barrel for shipping and storing oil, spirits, or alcohol. Oil has been shipped in this package to tropical climates and to Europe, landing their contents entire and they will hold, for any length of time, petroleum or spirits without loss. Their cost is but a trifle more than the common barrel, the machinery required being simple and not costly. For shop or territorial rights to manufacture and all information regarding them, apply to JOSHUA MERRILL, 6 13*] 108 Water street, Boston, Mass.

CIVIL AND MINING ENGINEERING at the Rensselaer Polytechnic Institute, Troy, N. Y. Instruction very thorough. Graduates obtain most desirable positions. Re-opens Sept. 11. For the Annual Register, containing full information, apply to 6 7*-H.] Prof. CHARLES DROWNE, Director, Troy, N. Y

SCHLENKER'S IMPROVED BOLTCUTTING MACHINE.—The best in use. Two sizes, cutting from ⅜ to 3 inches. V, or square thread, cut equal to lathe work. Up to 1 ½ inch, once passing over the iron is sufficient to cut a perfect thread. Send for circular giving full description, price, etc. Address R. L. HOWARD, Manufacturer, Or W. S. Shaw, Agent, Buffalo, N. Y. 5 6

WOODWORTH PLANERS A SPECIALTY—From new patterns of the most approved style and workmanship. Wood-working Machinery generally. Nos. 24 and 26 Central, corner Union street, Worcester, Mass. 2 10*—tf] WITHERBY, RUGG & RICHARDSON.

AMES' Celebrated Portable and Stationary STEAM ENGINES, All Sizes, and Superior to all others. Also, PAYES' PATENT TRIP HAMMER. Write for Circular. [2 13*] H. M. AMES, Oswego, N. Y.

BULKLEY'S PROCESS WILL DRY and condense Peat in 36 to 48 hours. For particulars address [7 8*] L. E. HOLDEN, Cleveland, Ohio.

AGENTS WANTED—For Four New and Valuable Articles of daily consumption. Address, with stamp, JOS. L. ROUTZAHN, Frederick City, Md. 8*

SETS, VOLUMES AND NUMBERS. Entire sets, volumes and numbers of SCIENTIFIC AMERICAN (Old and New Series) can be supplied by addressing A. B. C., Box No. 773, care of MUNN & CO., New York.

PORTABLE STEAM ENGINES, COMbining the maximum of efficiency, durability, and economy with the minimum of weight and price. They are widely and favorably known, more than 600 being in use. All warranted satisfactory or no sale. Descriptive circulars sent on application. Address J. C. HOADLEY & CO., Lawrence, Mass. 1 tf

DOUGLASS MANUFACTURING CO. Exclusive Manufacturers of COOK'S PATENT BORING IMPLEMENTS. Also, a complete assortment of

MECHANICS' TOOLS.

Framing Chisels, Socket Firmer Chisels and Gouges, Socket Paring Chisels, Drawing Knives, Screwdrivers Augers and Bits, Bung Borers, Boring Machines, Gimlets, Firmer Chisels and Gouges, Hollow Augers, Corkscrews, etc. Warehouse, 70 Beekman street, New York. 23 tf

MODELS, PATTERNS, EXPERIMENTAL and other Machinery, Models for the Patent Office, built to order by HOLSKE MACHINE CO., Nos. 528, 530, and 532 Water street, near Jefferson. Refer to SCIENTIFIC AMERICAN Office. 1 tf

WATER WHEELS.—The Helical Jonval Turbine is manufactured by 1 tf] J. E. STEVENSON, 40 Dey street, New York.

CHARLES A. SEELY, CONSULTING and Analytical Chemist, No. 26 Pine street, New York. Assays and Analyses of all kinds. Advice, Instruction, Reports, etc., on the useful arts. 1 tf

AIR SPRING FORGE HAMMERS ARE made by CHAS. MERRILL & SONS, 556 Grand street, New York. They will do more and better work, with less power and repairs, than any other Hammer. Send for a circular. 1 tf

THE

HARRISON BOILER

Is the only one now offered for sale entirely FREE from

DESTRUCTIVE EXPLOSION.

Twenty thousand horse-power have been made and put in operation within the last three years, with a constantly increasing demand. For descriptive circulars and price apply to the Harrison Boiler Works, Philadelphia, Pa., or to J. B. HYDE, Agent, 6 tf] Offices 9 and 10, No. 119 Broadway, N. Y.

A PRIZE MEDAL of The Paris Exhibition was awarded to

SHAW & JUSTICE

for their DEAD STROKE POWER HAMMER.

The great satisfaction given by these Hammers wherever introduced, warrants the Patentee in asserting them to be THE BEST, as well as the most economical Hammer in use. They are made of sizes suitable for forging iron from 10 in. to ¼ in. square, and are employed in manufacturing axles for locomotives as well as carriages; also, for axes, hatchets, hoes, shovels, agricultural implements, table cutlery, and die work generally, with equal success. For State Rights (not sold) and Hammers, address the Patentee, [4 6m] PHILIP S. JUSTICE, 14 North 5th street, Philadelphia, or 42 Cliff st., New York.

CARPENTERS

Send for Catalogue of New and Practical Architectural Works, enclosing stamp. A. J. BICKNELL, Troy, N. Y.

GREAT ECONOMY IN FUEL.—The Washington Iron Works' New Steam Engine, with Variable Cut-off, worked by the Governor patented by Wm. Wright, Oct. 1866, is the most perfectly simple and economical Engine yet introduced, saving 50 per cent in fuel. This engine takes the lead of all others, and is being put in in different parts of New England, this city, Philadelphia, and in the principal manufacturing districts of the country. For information address WASHINGTON IRON WORKS, Newburgh, N. Y., Or apply at the office of the Company, 57 Liberty st., New York City. Circulars sent to order. 9 tf

STEAM ENGINES.—COOK, RYMES & Co.'s celebrated first-class stationary, portable and hoisting engines constantly on hand, at their warerooms, 107 Liberty street, New York. 3 tf

$10 A Day made by any one with my Patent Stencil Tools. I prepay samples free. Beware of infringers. My circulars will explain. Address [7 4*—P] A. J. FULLAM, Springfield, Vt.

SCHOOL OF MINES, COLUMBIA COLLEGE. Instruction in Mining, Engineering, Metallurgy, Assaying, Analytical Chemistry, etc. Re-opens Oct. 7. Examination for admission for degree of Engineer of Mines, Oct. 31. For Catalogues and requirements for admission apply to C. F. CHANDLER, Dean of Faculty, East 49th street, New York. 7 13*

CAN I OBTAIN A PATENT?—For Advice and instructions address MUNN & CO., 37 Park Row, New York for TWENTY YEARS Attorneys for American and Foreign Patents. Caveats and Patents quickly prepared. The SCIENTIFIC AMERICAN $3 a year; 30,000 Patent cases have been prepared by M. & Co.

THE "McGOWAN" AND "BUCKEYE" Patterns Double-acting Hand and Power Pumps. Patented 1863. For railroads, factories, mills, etc. Agents wanted in every town and village. McGOWAN BROTHERS, Manufacturers, Cincinnati, Ohio. Send for catalogue. 5 13*

FOR ENGINE BUILDERS' AND STEAM Fitters' Brass Work, address F. LUNKENHEIMER, 10 26] Cincinnati Brass Works.

NITRO-GLYCERIN.—UNITED STATES BLASTING OIL CO.—We are now prepared to fill all orders for Nitro-Glycerin, and respectfully invite the attention of Contractors, Miners and Quarrymen to the immense economy in the use of the same. Address orders to JAMES DEVEAU, Sec., 1 28*] 32 Pine street, New York

ERICSSON CALORIC ENGINES OF GREATLY IMPROVED CONSTRUCTION.—Ten years of practical working by the thousands of these engines in use, have demonstrated beyond cavil their superiority where less than ten horse-power is required Portable and Stationary Steam Engines, Grist and Saw Mills, Cotton Gins' Air Pumps, Shafting, Pulleys, Gearing Pumps, and General Jobbing. Orders promptly filled for any kind of Machinery. JAMES A. ROBINSON, 1 tf—D] 164 Duane street, cor. Hudson, New York.

R. BALL & CO., SCHOOL STREET, WORCESTER, MASS., Manufacturers of Woodworth's, Daniell's, and Gray & Wood's Planers, Sash Molding, Tenoning, Mortising, Upright and Vertical Shaping, Boring Machines, Scroll Saws, and a variety of other Machines and articles for working Wood. Send for our Illustrated Catalogue. 1 25*

MACHINE CARD CLOTHING.—SARGENT CARD CLOTHING CO., Manufacturers of Cotton, Wool, and Flax Machine Card Clothing of every variety. E. S. LAWRENCE, Supt., Worcester, Mass. Sargent & Co., Agents, 70 Beekman street New York. 25 26*

IMPORTANT. A MOST VALUABLE MACHINE for all kinds of irregular and straight work in wood, called the Variety Moulding and Planing Machine, indispensable to competition in all branches of wood-working. Our improved guards make it safe to operate. Combination collars for cutters, saving 100 per cent, and feed table and connection, for waved moldings and planing, place it above all others. Evidence of the superiority of these machines is the large numbers we sell, in the different states, and parties laying aside others and purchasing ours, for cutting and shaping irregular forms, sash work, etc.

We hear there are manufacturers infringing on some one or more of our nine patents in this machine. We caution the public from purchasing such.

All communications must be addressed "Combination Molding and Planing Machine Company, Post-office Box 3230, New York. All our machines are tested before delivery, and warranted.

Send for descriptive pamphlet. Agents solicited. [1 13*

RICHARDSON, MERIAM & CO., Manufacturers and Dealers in DANIELL'S AND WOODWORTH PLANERS. Boring, Matching, Molding, Mortising and Tenoning Machines, Scroll, Cut-off, and Slitting Saws, Saw Mills, Saw Arbors, Spoke and Wood-turning Lathes, and other wood working Machinery. Warehouse, 107 Liberty street, New York. Manufactory, Worcester, Mass. 3 tf

PATENT POWER AND FOOT-PUNCHING PRESSES, the best in market, manufactured by N. C. STILES & CO., West Meriden, Conn. Cutting and Stamping Dies made to order. Send for Circulars. [1 13*

FOR FIRST-CLASS SHAFTING WITH Patent Self-oiling Boxes and adjustable Hangers, also Mill Work and special machinery, address 1 tf] BULLARD & PARSONS, Hartford, Conn.

WOOD, LIGHT & CO.—MANUFACturers of Machinists' Tools and Naysmyth Hammers, Lathes from 4 to 80 feet long, and from 15 to 100 inches swing. Planers from 24 to 60 inches wide and from 4 to 46 feet long. Upright Drills. Milling and Index Milling Machines. Profile or Edging Machines. Gun Barrel Machines Shatting, Mill Gearing, Pulleys and Hangers, with Patent Self-oiling Boxes. Works, Junction Shop, Worcester, Mass. Warehouse at 107 Liberty street, New York. 3 tf

PRESSURE BLOWERS—Equal in Force to Piston Blowers, and a perfect substitute for both Fan and Pistons—running more easily than either. Adapted for Blast, and Cupola, and Heating Purposes, Forges Steamships, Boilers, Ventilation, etc., etc. Prices according to sizes, ranging from $25 to $1,500. Address, for Circular B. F. STURTEVANT, 1 tf] 72 Sudbury street, Boston, Mass.

TAYLOR, BROTHERS & CO.'S BEST YORKSHIRE IRON.—This Iron is of a Superior quality for locomotive and gun parts, cotton and other machinery, and is capable of receiving the highest finish. A good assortment of bars in stock and for sale by JOHN B. TAFT, sole agent for the United States and Canada: No. 18 Batterymarch-st., Boston. 1 14*—B.

IRON PLANERS, ENGINE LATHES, Drills, and other Machinists' Tools, of Superior Quality, on hand and finishing. For Sale Low. For Description and Price, address NEW HAVEN MANUFACTURING CO., New Haven, Ct. 1 13* tf

LATHE CHUCKS—HORTON'S PATENT—from 4 to 24 inches. Manufacturer's address, E. HORTON & SON, Windsor Locks, Conn. 1 28*.

ANDREWS'S PATENT PUMPS, ENGINES, etc.—CENTRIFUGAL PUMPS, from 90 Gals. to 40,000 Gals. per minute, capacity.
OSCILLATING ENGINES (Double and Single), from 2 to 250 horse-power.
TUBULAR BOILERS, from 2 to 50 horse-power, consume all smoke.
STEAM HOISTERS to raise from ½ to 6 tuns.
PORTABLE ENGINES, 2 to 20 horse-power.
These machines are all first-class, and are unsurpassed for compactness, simplicity, durability, and economy of working. For descriptive pamphlets and price list address the manufacturers, W. D. ANDREWS & BRO., 1 tf No. 414 Water street N. Y

PHOENIX IRON WORKS— Established 1834. GEO. S. LINCOLN & CO., Iron Founders and Manufacturers of Machinists' Tools 54 to 60 Arch street, Hartford, Conn. We are prepared to furnish first-class Machinists' Tools on short notice. Samples may be seen in our Wareroom. Also, we keep constantly on hand our Patent FRICTION PULLEY, Counter Shafts for Lathes, etc. 7 tf

MASON'S PATENT FRICTION CLUTCHES, for starting Machinery, especially Heavy Machinery, without sudden shock or jar, are manufactured by VOLNEY W. MASON, 1 13* tf] Providence, R. I.

FAY'S PATENT WATER-PROOF Roofing Paper, etc. For Circular and Price List, and terms of County Rights, address C. J. FAY, 1 11*] Second and Vine streets, Camden, N. J.

THE 20TH ANNUAL EXHIBITION of the MARYLAND INSTITUTE FOR THE PROMOTION OF THE MECHANIC ARTS, Will be opened in the spacious Hall of the Institute, in Baltimore, on Tuesday Evening, Oct. 15, 1867. For particulars, address the undersigned, or JOSEPH GIBSON, Actuary. [2 14] J. H. TUCKER, Ch. Com.

THE CELEBRATED "SCHENCK" WOODWORTH PLANERS, WITH NEW AND IMPORTANT IMPROVEMENTS, Manufactured by the SCHENCK MACHINE CO., MATTEAWAN, N. Y. JOHN B. SCHENCK, President. T. J. B SCHENCK, Treas. 1 tf

$200 A MONTH IS BEING MADE with our IMPROVED STENCIL DIES, by Ladies and Gentlemen. Send for our free Catalogue containing Samples and Prices. Address 9 tf—R.] S. M. SPENCER & CO., Brattleboro, Vt.

PORTABLE AND STATIONARY Steam Engines and Boilers, Circular Saw Mills, Mill Work, Cotton Gins and Cotton Gin Materials, manufactured by the ALBERTSON & DOUGLASS MACHINE CO., New London, Conn. 1 tf

BAIRD'S NEW CATALOGUE OF PRACTICAL AND SCIENTIFIC BOOKS, Revised and Completed to June 1, 1867, will be sent, free of postage, to any one who will favor me with his address. HENRY CAREY BAIRD, Industrial Publisher, 406 Walnut street, Philadelphia.

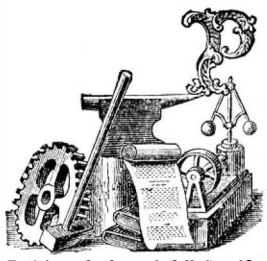
P. S. STUBS.—FILES AND OTHER Tools of the above superior brand. Also, all kinds of small tools and materials. Price List sent to any address. DANIEL GOODNOW, JR., 8 & 10] 23 Cornhill, Boston, Mass.

PARTIES DESIRING MACHINERY built by contract, in Iron or Wood, can correspond with the MEDINA IRON WORKS, 4 4eow*] Medina, N. Y.

GILLESPIE HYDRAULIC GOVERNOR for Water Wheels.—The only Governor that, on a change of labor, moves the gate instantly to the required point, AND STOPS—gives an evenness of speed not excelled by the best steam engine; operates the largest gates with ease; saves a large per centage of repairs, and insures against accidents from breaking of shafts or belts. Entire satisfaction guaranteed. Send for circular. JOHN S. ROGERS, Treas. Gillespie Governor Co., 1 10eow] 13 Kilby street, Boston, Mass.

PLATINUM—For all Laboratory and Manufacturing purposes. Platinum Scrap and Ore Purchased. H. M. RAYNOR, Office 748 B'dway, N. Y. 8 5*eow

© 1867 SCIENTIFIC AMERICAN, INC.



PATENTS

The First Inquiry that presents itself to one who has made any improvement or discovery is: "Can I obtain a Patent?" A *positive* answer can only be had by presenting a complete application for a Patent to the Commissioner of Patents. An application consists of a Model, Drawings, Petition, Oath, and full Specification. Various official rules and formalities must also be observed. The efforts of the inventor to do all this business himself are generally without success. After a season of great perplexity and delay, he is usually glad to seek the aid of persons experienced in patent business, and have all the work done over again. The best plan is to solicit proper advice at the beginning.

If the parties consulted are honorable men, the inventor may safely confide his ideas to them: they will advise whether the improvement is probably patentable, and will give him all the directions needful to protect his rights.

Messrs. MUNN & CO., in connection with the publication of the SCIENTIFIC AMERICAN, have been actively engaged in the business of obtaining patents for over twenty years—*nearly a quarter of a century*. Over Fifty thousands inventors have had benefit from our counsels. More than one third of all patents granted are obtained by this firm.

Those who have made inventions and desire to consult with us, are cordially invited to do so. We shall be happy to see them in person, at our office, or to advise them by letter. In all cases they may expect from us an *honest opinion*. For such consultations, opinion, and advice, *we make no charge*. A pen-and-ink sketch, and a description of the invention should be sent, together with stamps for return postage. Write plainly, do not use pencil nor pale ink; be brief.

All business committed to our care, and all consultations, are kept by us *secret and strictly confidential*. Address MUNN & CO., 37 Park Row, New York.

Preliminary Examination.—In order to obtain a Preliminary Examination, make out a written description of the invention in your own words, and a rough pencil or pen-and-ink sketch. Send these with the fee of $5 by mail, addressed to MUNN & CO., 37 Park Row, and in due time you will receive an acknowledgment thereof, followed by a written report in regard to the patentability of your improvement. The Preliminary Examination consists of a special search, which we make with great care, among the models and patents at Washington to ascertain whether the improvement presented is patentable.

In Order to Apply for a Patent, the law requires that a model shall be furnished, not over a foot in any dimensions,—smaller, if possible. Send the model by express, pre-paid, addressed to Munn & Co., 37 Park Row, N. Y., together with a description of its operation and merits. On receipt thereof we will examine the invention carefully and advise the party as to its patentability, free of charge.

The model should be neatly made of any suitable materials, strongly fastened, without glue, and neatly painted. The name of the inventor should be engraved or painted upon it. When the invention consists of an improvement upon some other machine, a full working model of the whole machine will not be necessary. But the model must be sufficiently perfect to show, with clearness, the nature and operation of the improvement.

New medicines or medical compounds, and useful mixtures of all kinds, are patentable.

When the invention consists of a medicine or compound, or a new article of manufacture, or a new composition, samples of the article must be furnished, neatly put up. Also, send us a full statement of the ingredients, proportions mode of preparation, uses, and merits.

Reissues.—A reissue is granted to the original patentee, his heirs, or the assignees of the entire interest, when by reason of an insufficient or defective specification the original patent is invalid, provided the error has arisen from inadvertence, accident, or mistake, without any fraudulent or deceptive intention.

A patentee may, at his option, have in his reissue a separate patent for each distinct part of the invention comprehended in his original application, by paying the required fee in each case, and complying with the other requirements of the law, as in original applications.

Each division of a reissue constitutes the subject of a separate specification descriptive of the part or parts of the invention claimed in such division; and the drawing may represent only such part or parts. Address MUNN & CO., 37 Park Row, for full particulars.

Interferences.—When each of two or more persons claims to be the first inventor of the same thing, an "Interference" is declared between them, and a trial is had before the Commissioner. Nor does the fact that one of the parties has already obtained a patent prevent such an interference; for, although the Commissioner has no power to cancel a patent already issued, he may, if he finds that another person was the prior inventor, give him also a patent, and thus place them on an equal footing before the courts and the public

Caveats.—A Caveat gives a limited but immediate protection, and is particularly useful where the invention is not fully completed, or the model is not ready, or further time is wanted for experiment or study. After a Caveat has been filed, the Patent Office will not issue a patent for the same invention to any other person, without giving notice to the Caveator, who is then allowed three months time to file in an application for a patent. A Caveat, to be of any value, should contain a clear and concise description of the invention, so far as it has been completed, illustrated by drawings when the object admits. In order to file a Caveat the inventor needs only to send us a letter containing a sketch of the invention, with a description in his own words. Address MUNN & CO., 37 Park Row, N. Y.

Additions can be made to Caveats at any time. A Caveat runs one year, and can be renewed on payment of $10 a year for as long a period as desired.

Quick Applications.—When, from any reason, parties are desirous of applying for Patents or Caveats, in GREAT HASTE, without a moment's loss of time, they have only to write or telegraph us specially to that effect, and we will make special exertions for them. We can prepare and mail the necessary papers at less than an hour's notice, if required.

Foreign Patents.—American Inventors should bear in mind that, as a general rule, any invention that is valuable to the patentee in this country is worth equally as much in England and some other foreign countries. Five Patents—American, English, French, Belgian, and Prussian—will secure an inventor exclusive monopoly to his discovery among ONE HUNDRED AND THIRTY MILLIONS of the most intelligent people in the world. The facilities of business and steam communication are such that patents can be obtained abroad by our citizens almost as easily as at home. The majority of all patents taken out by Americans in foreign countries are obtained through the SCIENTIFIC AMERICAN PATENT AGENCY. A Circular containing further information and a Synopsis of the Patent Laws of various countries will be furnished on application to Messrs. MUNN & CO.

For Instructions concerning Foreign Patents, Reissues, Interferences, Hints on Selling Patents, Rules and Proceedings at the Patent Office, the Patent Laws, etc., see our Instruction Book. Sent free by mail on application. Those who receive more than one copy thereof will oblige by presenting them to their friends.

Address all communications to

MUNN & CO.,
No. 37 Park Row, New York City.
Office in Washington, Cor. F and 7th streets.

Patents are Granted for Seventeen Years, the following being a schedule of fees:—

On filing each Caveat	$10
On filing each application for a Patent, except for a design	$15
On issuing each original Patent	$20
On appeal to Commissioner of Patents	$20
On application for Reissue	$30
On application for Extension of Patent	$50
On granting the Extension	$50
On filing a Disclaimer	$10
On filing application for Design (three and a half years)	$10
On filing application for Design (seven years)	$15
On filing application for Design (fourteen years)	$30

In addition to which there are some small revenue-stamp taxes. Residents of Canada and Nova Scotia pay $500 on application

PATENT CLAIMS.—Persons desiring the claim of any invention, patented within thirty years, can obtain a copy by addressing a note to this office, giving name of patentee and date of patent, when known, and inclosing $1 as a fee for copying. We can also furnish a sketch of any patented machine to accompany the claim, at a reasonable additional cost. Address MUNN & CO. Patent Solicitors, No. 37 Park Row, New York.

Advertisements.

A limited number of advertisements will be admitted in this page on the following terms:—Seventy-five cents a line, each insertion, for solid matter; one dollar a line for space occupied by engravings.

IMPROVED MACHINE FOR THREADING SCREWS.—It is unequaled in simplicity of construction, uniformity in the size of screw and thread.

Durability of Dies:—I have one set that has threaded seven hundred thousand (700,000,) that has never been repaired in any manner, and that are apparently as good as new. Facility with which the Dies can be cut—Rapidity:—The first Machine started is running at the rate of five thousand (5,000) per hour, and can be run on screws of less than ¼-inch diameter at 15,000 per hour.

Patented by the subscriber July 9, 1867, who will sell rights and furnish machines, or will sell the Patent for a reasonable price to any person or persons who may wish to make a business of introducing it. Apply to

10 tf os] EDWARD CROFT, Waterbury, Conn.

CHELSEA MACHINE WORKS,
NORWICH. CONN.,
Make a Specialty of Manufacturing
ENGINE LATHES,
WITH SMITH'S PATENT IMPROVEMENTS.

Mechanics and Manufacturers are earnestly invited to examine and judge for themselves as to the utility of these improvements; also of the substantial character, weight, workmanship, material, convenience, and durability of these lathes.

10 4os] H. K. SMITH, Sup't and Gen'l Ag't.

AGENTS WANTED—$10 to $20 a day, to introduce our new patent **Star Shuttle Sewing Machine.** Price $20. It uses two threads, and makes the genuine LOCK STITCH. All other low-priced machines make the Chain Stitch. Exclusive territory given. Send for circulars. W. G. WILSON & CO., Manufacturers, Cleveland, Ohio. 13 tf os

"WORKS ON MAN!"—For New Illustrated Catalogue of best books on Physiology, Anatomy, Gymnastics, Cistetics, Physiognomy, Shorthand Writing, Memory, and Self-Improvement, send two stamps to S. R. WELLS, 389 Broadway, New York. Agents wanted. 10 4os

AGENTS WANTED—To sell Colton's Burglar Alarm. Address GEO. A. COLTON & CO., Novelty Works, Adrian, Mich. Send for circular. 10 4os

FOR SALE—To Close an Estate—A Flouring Mill, Distillery, and Tan Yard, together with three hundred acres of land. Also, a Farm of Five Hundred acres, with fine improvements. For particulars address H. McCONATHY, Ex.,

9 3 os] Columbia, Boone county, Mo.

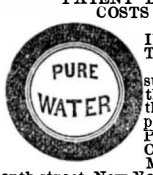
IMPORTANT TO SMOKERS.

THE Patent on the neat little device illustrated on page 129 of this volume of the Scientific American, for perforating cigars, is offered for sale on most reasonable terms. Every cigar store, or bar room, or boarding house should have one of the instruments. They are also adapted for individual smokers. The manufacture of them must be very profitable. For rights to manufacture, address OLIVER GUINAND, Patentee,

9 tf os] Vicksburg, Miss.

HEALTH AND ECONOMY.—

PATENT LEAD-ENCASED TIN PIPE.
COSTS LESS THAN LEAD PIPE, AND IS MUCH STRONGER.



INDORSED by PHYSICIANS & WATER COMMISSIONERS everywhere. Recent improvements enable us to supply this pipe at a less price per foot than common lead pipe. To furnish the cost, we should know the head of pressure of water and bore of pipe. Pamphlets sent free. Address The COLWELLS, SHAW & WILLARD M'F'G Co., Foot of West Twenty-seventh street, New York. 8 4os

MAGIC LANTERNS,
AND
STEREOPTICANS,

OF Every Description. Also, Oxy-Hydrogen Microscopes, Poloriscopes, the Magnesium Light, etc., etc. A Priced and Illustrated Catalogue, and over 5000 views for the same, sent free on application.

9 2os] WILLIAM Y. McALLISTER, 728 Chestnut street, Philadelphia.

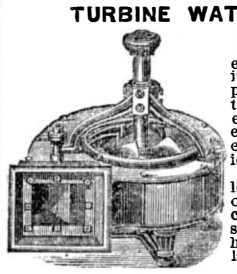
THE
LANE & BODLEY
POWER MORTISING MACHINES.

No. 1.—Carpenter Work	$200
" 2.—Furniture "	$275 and 325
" 5.—Hubs	500
" 6.—Agricultural Implement Manu'f.	425
" 6.—Rail-car Manufactures	500

☞ These are the only Machines that will mortise hard wood without jarring the foot of the operator.

8 4 os] LANE & BODLEY, Cincinnati Ohio.

TURBINE WATER WHEELS.



The REYNOLDS PATENT embodies the progressive spirit of the age. Simplicity, Economy, Durability, Accessibility all combined. The only Turbine that excels Overshots. Awarded the Gold Medal by American Institute.

Shafting, Gearing and Pulleys furnished for all kinds of Mills, made on Mechanical Principles, under my personal supervision, having had long experience. Circulars sent free.

4 13*—H—tf] GEORGE TALLCOT, No. 96 LIBERTY STREET, NEW YORK.

EUROPEAN AGENCY for the Exhibition and sale of American Patents and Manufactures.
BLANCHARD & McKEAN,
No. 3 Rue Scribe, Paris, France,

Will attend personally and promptly to all business relating to the interests of American Inventors and Manufacturers in Europe. Corresponce solicited.

GEO. A. BLANCHARD.] 2 ostf [J. A. McKEAN.

GUN AND SEWING MACHINE Screws of all kinds and sizes on hand and made to order by the LAMB KNITTING MACHINE MF'G CO., Successors to the

7 os tf] Mass. Ames Co., Chicopee Falls, Mass.

WANTED—A quantity of Fullam's Stencil Dies. Parties having purchased those dies will be liberally rewarded by communicating certain facts—if sent soon to S. M. SPENCER & CO., Brattleboro, Vt.

S. M. S. & CO. are prepared to furnish a great variety of the Best Steel Dies from 3-32 to 1 inch in size. Send to them for catalogue. 9 4 os

THE PHRENOLOGICAL JOURNAL for September contains Portraits and Characters of Hon. R. D. Connolly, Rev. Newman Hall, Rev. Thomas Binney, distinguished Orators and Authors; Mrs. Husband and Mrs. Hoge; Studies in Physiognomy; For Gentlemen, by Mrs. Wyllys; True and False Marriages; Memory; Conscientiousness, its Functions; Our religion; Gradations of Intellect; Races of Man, their Origin; Queen Elizabeth; Toggery; A New Steamer, Spirit of the Age; Central Park and the New Boulevard—illustrated. 30 cents, or $3 a year. S. R. WELLS, Editor, 389 Broadway, New York. Newsmen have it. 10 3

KNIFE MANUFACTURERS Send for Sample and price list of Thompson's pressed ferrule. Address E. J. THOMPSON, South Antrim, N. H.

BEAGLE'S PATENT CONNECTING or Open Link and Harness Snap, Self-Locking, no Spring used. Every Farmer and Teamster wants them. Sample of each, by mail, for 50 cents. For circular, price list, and terms of State Rights address HENRY BEAGLE, JR.,

10 tf] Willow street, above 5th, Philadelphia, Pa.

THE AUBURN FILE WORKS,
AUBURN, N. Y.
Manufacturers of
HAND-CUT FILES OF THE BEST QUALITY.

We give particular attention to the manufacture of Second-Cut, Smooth, and Dead Smooth Files of 6 inches and under, suitable for fine work. 10 4

CIRCULAR SAWS,

WITH

EMERSON'S PATENT MOVABLE TEETH.

These saws are now in use in every State in the Union. More than nine hundred, of sizes from inches to 72 inches in diameter, are in operation, sawing timber of all kinds, and cutting, in some cases, 30,000 feet of inch lumber per day. Also

EMERSON'S PATENT ADJUSTABLE SWAGE,

For Spreading, Sharpening, and Shaping the Teeth. Price $5. Manufactured by

AMERICAN SAW COMPANY,
Office No. 2 Jacob street near Ferry street, New York

Send for New Descriptive Pamphlet, and Price List. 5 tf

TIN AND SHEET-IRON WORKERS.
JUST READY, THE THIRD EDITION. Price $2.50.

A PRACTICAL WORKSHOP COMPANION FOR TIN, SHEET-IRON, AND COPPER-PLATE WORKERS—Containing rules for describing various kinds of patterns used by tin, sheet-iron and copper-plate workers; practical geometry; mensuration of surfaces and solids; tables of the weights of metals, lead pipe, etc.; tables of areas and circumferences of circles; japan, varnishes, lackers, cements, compositions, etc., etc. By LEROY J. BLINN, Master Mechanic. With over 100 illustrations. 12mo. $2.50. Free of postage.

CONTENTS.

RULES FOR DESCRIBING PATTERNS.—An envelope for a cone; a frustrum of a cone; a can top or deck flange; a pattern for, or an envelope for a frustrum of a cone; a tapering oval article to be in four sections; a tapering oval article to be in two sections; a tapering oval article; a tapering oval or oblong article, the sides to be straight, with quarter circle corners, to be in two sections; a tapering oval or oblong article, the sides to be straight, one end to be a semicircle, the other end to be straight, with quarter circle corners, to be in two sections; a tapering oval or oblong article, the sides to be straight, with semicircle ends, to be in two sections; covering of circular roofs; two different principles; to cover a dome by the first method; to cover a dome by the second method; to ascertain the outline of a course of covering to a dome, without reference to a section of the dome; to describe a pattern for a tapering square article; a square tapering article to be in two sections; a tapering article, the base to be square and the top a circle, in two sections; a tapering article, the base to be a rectangle and the top square, in two sections; a tapering article, the base to be a rectangle and the top a circle, in two sections; a tapering article the top and base to be a rectangle, in two sections; tapering octagon top or cover; a miter joint at right angles for a semicircle gutter; a miter joint at any angle for a smicircle gutter; a miter joint for an O G gutter at right angles; a miter joint for O G cornice at right angles; also an offset; an octagon O G lamp top or cover; a T pipe at right angles; a T pipe at any angle; a T pipe, the collar to be smaller than the main pipe; a T pipe at any angle, the collar to set on one side of the main pipe; a pipe to fit a flat surface at any angle, as the side of the roof of a building; a pipe to fit two flat surfaces, as the roof of a building; an elbow at right angles; an elbow pattern at any angle; an elbow in three sections; an elbow in four sections; an elbow in five sections: a tapering elbow; an oval boiler cover; a flange for a pipe that goes on the roof of a building; octagon or square top or cover; steamer cover; an ellipse or oval having two diameters given; an ellipse with the rule and compasses, the transverse and conjugate diameters being given, that is, the length and width; to find the centre and the two arcs of ellipse; to find the radius and versed sine for a given frustrum of a cone; practical geometry; decimal equivalents to fractional parts of lineal measurement; definitions of arithmetical signs; mensuration of surfaces; mensuration of solids and capacities of bodies; tables of weights of iron, copper and lead; tables of the circumferences and areas of circles; sizes and capacity of tinware in form of frustrum of a cone, such as pans, dish kettles, pails, coffee pots, wash bowls, dippers, measures, druggists' and liquor-dealers' measures; American lap-wheeled iron boiler flues; table of effects upon bodies by heat; weight of water; effects produced by water in an aeriform state; practical properties of water; effects produced by water in its natural state; effects of heat at certain temperatures; tempering; effects produced by air in its natural and in a rarefied state; table of the expansion of atmospheric air by heat; size, length, breadth and weight of tin plates; crystallized tin plate; list of caliber and weights of lead pipe; caliber and weights of fountain or aqueduct pipes; to ascertain the weights of pipes of various metals, and any diameter required; weight of a square foot of sheet iron, copper and brass, as per Birmingham wire gage; recapitulation of weights of various substances. PRACTICAL RECEIPTS.—Japanning and varnishing; varnishes, miscellaneous; lackers; cements; miscellaneous receipts; Britannia; solders, etc.; strength of materials.

☞ The above, or any of my books sent by mail free of postage, at the publication price.

☞ My new Catalogue of Practical and Scientific Books, complete to June 1, 1867, sent free of postage to any one favoring me with his address.

HENRY CAREY BAIRD,
Industrial Publisher,
9 1] 406 Walnut street, Philadelphia.

TO A RESPONSIBLE BUSINESS MAN.—Having sold my interest in an invention patented in U. S. May, 1867, I will let any responsible party have a half interest in the Foreign Patents, which are now pending, for the cost of taking out the same, provided the party's business qualifications suit me.

Address Box 186, Newton, Sussex county, N. J. 1*

CHEAPEST AND BEST WOOD MILL in the World. Warranted to saw a cord of hard wood from the log in 7 minutes with one horse. It took the first premium at the N. Y. State fair at Saratoga, and county fairs wherever exhibited. Price of mill, all complete, $75 dollars. Send for circulars. Address

1*] REYNOLDS & TOTMAN, Fredonia, N. Y.

MACHINE KNIVES, CUTTING TOOLS, etc.—The Subscribers are prepared, with an experience of twenty years, to manufacture large cutting instruments and tools requiring a superior edge and temper—where quality is the chief requisite. Dyewood and Chipper Knives, Paper-makers' and Bookbinders' Knives, Shear Blades, Box-makers' Shears, Knives for Planing and Molding Machines, Spoke Lathes, Straw Cutters, etc., made to order and warranted. Parties desiring it can have testimonials of the quality of our tools by a circular.

1*] JENKINS & TONGUE, 33 and 35 Richmond street, Philadelphia.

The Scientific American.

4000 Book Pages a Year

THE BEST NEWSPAPER IN THE WORLD.

This paper differs materially from other publications being an Illustrated Periodical, devoted to the promulgation of information relating to the various Mechanical, and Chemical Arts, Photography, Manufactures, Agriculture, Patents, Inventions, Engineering, Mill Work, etc.

Every number of the SCIENTIFIC AMERICAN contains sixteen large pages of reading matter, abundantly illustrated.

All the most valuable discoveries are delineated and described in its issues so that, as respects inventions, it may be justly regarded as an Illustrated Repertory, where the Inventor may learn what has been done before him in the same field which he is exploring, and where he may bring to the world a knowledge of his own achievements.

The contributors to the SCIENTIFIC AMERICAN are among the most eminent scientific and practical men of the times.

Mechanics, Inventors, Engineers, Chemists, Manufacturers, Agriculturists, and people in every profession of life, will find the SCIENTIFIC AMERICAN to be of great value in their respective callings. Its counsels and suggestions will save them hundreds of dollars annually, besides affording them a continual source of knowledge, the value of which is beyond pecuniary estimate.

An official list of all Patents granted, together with the claims thereof, is published weekly.

The form of the SCIENTIFIC AMERICAN is adapted for binding and preservation; and the yearly numbers make splendid volume of nearly one thousand quarto pages, equivalent to nearly four thousand ordinary book pages.

Published Weekly. $3 a year, $1,50 half year, 10 copies for 1 year, $25. Specimen copies sent gratis. Address

MUNN & CO.,
No. 37 Park Row, New York.

© 1867 SCIENTIFIC AMERICAN, INC.